SCIENCE AND INDUSTRY Sci Lit

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MAR 14 1950

1920—Thirty Years of Service to Construction—1950

Contractors and Engineers Monthly

Vol. 47, No. 3 MARCH, 1950 $3 a Year, 50 Cents a Copy

Covering the Field

- **The Road Problem—What to Do?**

Interested in an expert's diagnosis and suggestions? Wilfred Owen has an article on page 3 of this issue.

On page 77, California Institute speakers hammer away at three basic needs: planning, priorities, public relations.

- **Lock for River Canal**

A digest of excavating, pile driving, and concreting operations at Lock 2, the Pearl River, La., appears on page 5.

- **Bituminous Road Work**

A crushed-limestone base and an asphalt penetration surface treatment have bettered a state route in Iowa—page 11.

Widening and hot-mix have eased a bad bottleneck in Utah—page 55.

- **Sewage-Plant Excavation**

Rigs worked in the dry, but only because big pumps operating in metal sumps were able to lower the high ground-water table. Turn to page 17.

- **Year-Round Maintenance**

There's no slack season for highway maintenance in the Green Mountain State. Page 23 chronicles typical activities of one of the 12 districts.

- **Dock Shed; Retail Store**

A 1,548-foot-long steel transit shed has swelled the capacity of the Alabama State Docks at Mobile from 22 to 25 ships. Page 28 carries the job report.

Sears-Roebuck is building a new store in West Springfield, Mass.—see page 73.

- **Dickinson Dam**

They're way ahead of schedule up there on the Heart River in North Dakota. Stories of earth work and concrete placing, page 34, tell why.

- **County Road Work**

Raise your construction standards and lower your maintenance costs—that's the formula this county swears by (page 37).

- **Parkway Slab and Curb**

Special feature of the 21-mile concrete paving job described on page 46 was the construction of white reflecting curbs for nighttime traffic safety.

- **Care of Equipment**

Page 52 tells how one foreman and four mechanics kept 40 pieces of heavy equipment toeing the line on a dam job.

- **Weed-Control Conference**

And you can be sure the corridors and anterooms of the Hotel New Yorker rang with plenty of healthy argument over cutting versus chemical control—page 61.

- **Runway Paved in 20 Days**

Over 50,700 square yards of 7 and 8-inch concrete was placed in that time—while the rain held off. Story on page 82.

- **Bridge Construction**

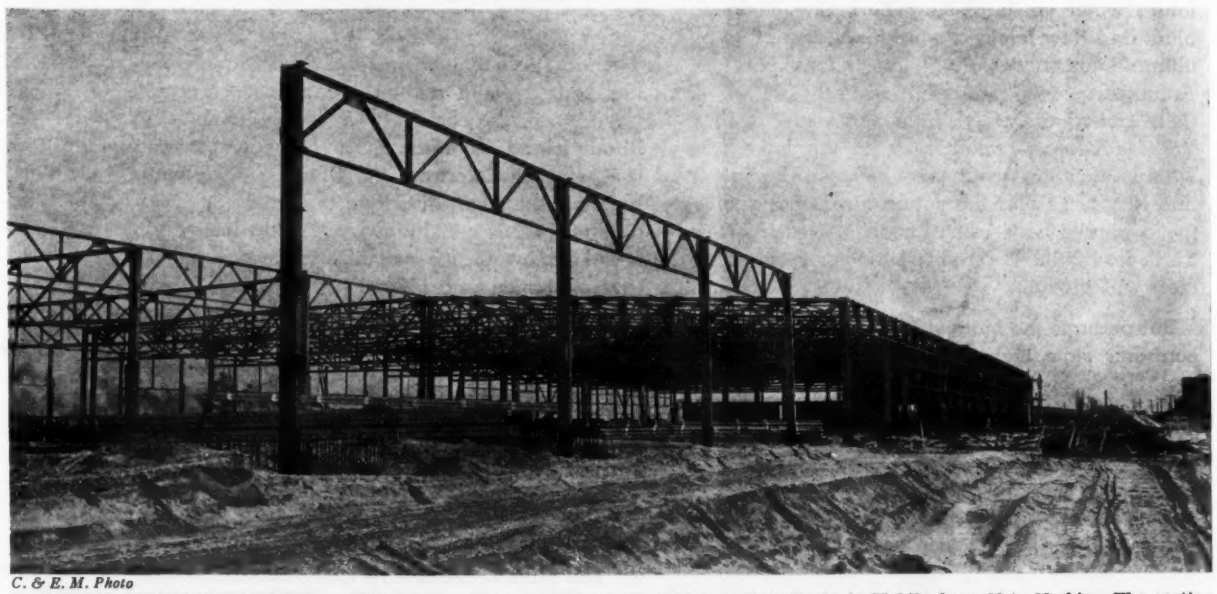
A higher, wider bridge for Miami Beach traffic—see page 64.

A new expressway bridge to by-pass the narrow, crooked streets of two busy mill towns in New England—see page 89.

(You will find "In This Issue" on page 4)

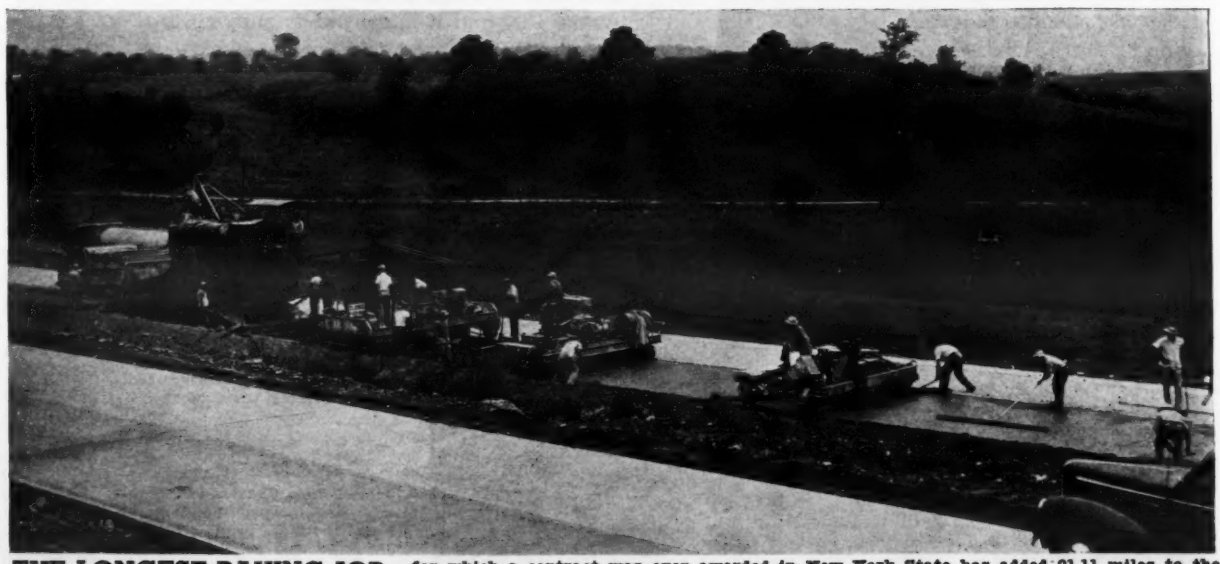
C. & E. M. Photo

SEWAGE-PLANT EXCAVATION at Reno, Nev., posed a serious ground-water problem (see page 17). But with heavy-duty propeller pumps in action, this Northwest 25 Pullshovel loaded dump trucks in the dry. At left is a Caterpillar tractor and a LeTourneau Carryall. Earl E. Games subcontracted the excavation.



C. & E. M. Photo

A STEEL TRANSIT SHED will increase the capacity of the Alabama State Docks in Mobile from 22 to 25 ships. The section pictured is 1,000 feet long and parallels Berth 6 and 7. Rust Engineering Co. was the contractor. The story on page 28 also covers a second contract for another 548-foot section along Berth 8. Total price, $1,276,457.



THE LONGEST PAVING JOB for which a contract was ever awarded in New York State has added 21.11 miles to the Taconic State Parkway. John Arborio, Inc., built the 8-inch 24-foot-wide concrete pavement. Here's a view of a finished section of one roadway and paving machines lined up on the other. See page 46 for the story.

NEWS AND VIEWS

of the construction industry at home and abroad — trends, state and Federal legislation, people, research

Said to be the largest architectural-concrete job in the country, the $40,000,000 Parklabrea housing development in Los Angeles sprawls over a 176-acre tract and will accommodate over 13,000 persons when completed late this year. Concrete form work took almost 3,000,000 feet of Douglas fir plywood. C. & E. M. carried the story of pile driving and foundation work in its May issue last year, on page 74.

Listen in at any keyhole or transom during business hours these days, and chances are that you'll hear the word "merchandising", "marketing", or "selling". **Everybody, it seems, is back to selling someone something,** or talking about it.

J. Walter Thompson Co., in a booklet on 1950 marketing opportunities, calls it **creating the will-to-buy** in a public with a disposable personal income that can reach $200 billion in 1950, and a real purchasing power up 6 per cent from 1949 . . . Construction-equipment distributors call it **increasing volume** by better repair and parts service for customers, better sales training (for notes on the recent AED powwow see page 95) . . . The Producer's Council, organization of manufacturers of building materials and equipment, calls it **stepping up a demand** for new homes among the 7,000,000 families living in old ones.

There's one demand that needs no stepping up, however, as bathless, shaveless, parched New Yorkers will testify—the demand for water. It's only potential suppliers that have to be sold on an integrated long-range water project. Incodel (Interstate Commission for the Delaware River Basin) is trying just that. It has submitted to Governors Dewey, Duff, and Driscoll **a $500 to $600 million 10 to 15-year program for supplying the future water needs of New York City, Philadelphia, and New Jersey** metropolitan districts to an ultimate capacity of 1.5 billion gallons daily . . . Another proposal has been made by Charles E. Sells, acting as Chief Engineer of a special New York legislative commission, to tap Lake Erie waters, develop reservoirs between Rochester and Niagara Falls, and set up a regional authority to handle water distribution in western New York. It remains to be seen whether these salesmen will prevail.

But perhaps the biggest selling job of the year confronts state highway departments. Certainly their needs are among the biggest . . . just take a look at the table on page 4 which reports the estimated costs, by states, of correcting the nation's highway deficiencies . . . $41 billion the grand total. Federal Aid, it's true, contributed almost $402 million to improve 21,031 miles of roads during the 1949-50 fiscal year, says Commerce (the figures were $310 million and 18,222 miles for 1948-49) . . . but **there's small chance that Congress will boost the yearly F-A ante by more than $50 million.** President Truman has, in fact, recommended that it be held to $500 million annually for the next two years . . . with emphasis to be placed on the Interstate Highway System. "Overall budgetary considerations" make it impossible, he said, to proceed with the road program as rapidly as we should like. So the selling job remains—selling the public on its stake in good roads.

However, the problem of providing good roads is more than a money problem, says Wilfred Owen of the Brookings Institution, in an article on page 3 of this issue. It should be "assessed in relation to the total transportation system, rather than viewed in isolation" . . . We should compare the "cost of transportation under existing conditions with the estimated transportation cost under conditions provided by a more adequate highway system." A way of looking at the problem has to be sold before we can hope to deal with it effectively.

Almost no one, it seems, has much trouble selling state legislatures on toll roads. Proposals have recently been introduced in **Kentucky, Rhode Island, Georgia** . . . The law courts remain to be sold in **Colorado** and **Ohio** . . . **Oklahoma** has applied for an RFC loan to finance an Oklahoma City-Tulsa toll highway . . . **New Jersey** has been empowered to sell $220 million worth of revenue bonds for a 118-mile cross-state toll road. The trend may even spread to major cities. A corporation has been formed in **Dallas** to build a 220-mile $86 million toll turnpike to Houston . . . and Robert Moses, Chairman of New York City's Triborough Bridge and Tunnel Authority, has proposed construction of a $26 million elevated cross-town toll highway in **Manhattan.**

But to get back for a moment to the nation's free roads and the job of selling them to the public. **The Missouri Highway Commission, for one, has laid its woes right in the taxpayer's lap.** "A crisis in our road affairs is now at hand," it warns in a financial statement to the people of the state . . . and it urges public support, in a referendum vote next month, of a new law increasing the state gas tax, now the lowest in the country, by 2 cents . . . (A 2-cent increase will also come up this month in **Michigan.**

"As it becomes obvious that many needed road and bridge improvements cannot be constructed out of present revenues for a number of years, **the scope of the maintenance program enlarges,"** says H. A. Radzikowski, BPR Maintenance Chief. (It cost over $1 billion to maintain our highway plant in 1948—or 72 cents for every dollar spent on road construction, as against 42 cents in 1930.) And as the program enlarges, the "importance of attracting enterprising engineers to road maintenance activities is on the increase." So it goes—still another selling job.

Meanwhile, though, things do get on, programs do push ahead . . . Take research, for example. A **Kansas** study finds that concrete highways built in the 1920's were sounder and "have resisted today's traffic impacts to a greater extent than the pavements constructed subsequent to 1935." Further study is proceeding apace . . . Next month **Maryland** will start testing the effect of heavy trucks on 1.1 miles of reinforced-concrete pavement near LaPlata. Four lanes will be subjected to four different axle weights about 500 times a day during the 3 to 6-month tests. Results should be interesting.

As for road-builder salesmen, they're right on the ball. Arute Brothers, of New Britain, Conn., recently smoothed and contoured 20 acres into a first-class athletic field for New Britain Teachers College, where James Arute's son now goes and President Jack's son used to go . . . The charge? Not one penny for what would have been a $35,000 job. It may be money out of pocket for the Arutes, but it's dividends galore in good will.

Finally, this cheering tidbit from the AAA on **a safety selling job well done:** every maker of anti-histamine pills has agreed to label his product with a warning to users not to drive if the drug makes them drowsy. That should ease traffic snarls and boost safety, at least during the colds season . . . With the drugged and drowsy off the roads, all we have to watch out for now are the drunken, the distracted, and the demented.

At Morgantown, W.Va., Dravo Corp. of Pittsburgh has completed the first phase of a new lock and dam on the Monongahela River to increase traffic, especially coal trade, between Fairmont and points north. Here is the lock chamber just before flooding, with the cofferdam still in place. Work on the dam has already begun, and a cofferdam has been completed on the other side of the river for construction of an abutment. The Army Engineers are supervising the project.

Jack, James, Charles, and Leonard Arute, road builders of New Britain, Conn., recently did a $35,000 grading job for free as a civic gift. See the next-to-last paragraph above.
New Britain Herald Photo

The Highway Problem In the United States

Unbalanced Transportation System Needs Far-Sighted Road Program and Broader View of the Whole Problem

By WILFRED OWEN,*
The Brookings Institution

✦ THE importance of continued progress in highway transportation is twofold. First, moving around in the automotive age involves a substantial and growing item in the family budget. Having become dependent on motor transportation, we are interested as individuals in the continued availability of this service at low cost. Second, since a large proportion of American industry and employment is related to high-level operations in the automotive and allied fields, we are interested as a nation in the sustained demand for automotive products.

The outlook for highway transportation in the coming decade depends on many factors: vehicle design and manufacture; development in rubber tires and fuels; highway design and construction policies; and the availability of numerous materials, parts, accessories, and services. A wide assortment of private industries, together with thousands of government agencies, combine to make an automobile ride a reality.

Thus far we have experienced a long record of singular achievement in all of these endeavors. Looking back only three decades to 1920, the accomplishments since that time in the design and performance of the vehicle, in tires and gasoline, and in the development of the highway system attest to this record. Today technological improvements in the vehicle and the expansion of high-type highway facilities continue. In 1949 a record 6.2 million vehicles were produced, and registrations reached a new high of 43 million. Over $3 billion was spent during the year for highways. Motor vehicle traffic was at a new high, and the trend toward decentralization of industry and living was assurance that the impact of the automotive age will be even greater in the years ahead.

System Is Out of Balance

Despite the record accomplishments of 1949 and the long-term trends to date, there is evidence that individual achievements in each segment of the total transportation picture may not be adding up to progress in automotive transportation as a whole. The fact that each contributor in the field of automotive transportation is occupied almost exclusively with his own particular contribution has left little opportunity to take a broader view, or to determine whether the separate parts are being fitted together to provide a balanced result. Car makers are concerned with their cars, petroleum people with petroleum, safety experts with safety, and road designers with the design of roads. No one is in a position to stand back and take a look at the whole operation. The result is obvious: as a nation we have underrated the importance of highway and terminal facilities. We have emphasized the vehicle and de-emphasized the road. In spite of progress all along the line, we have failed to achieve a balanced program which will assure the best transportation service at the lowest cost.

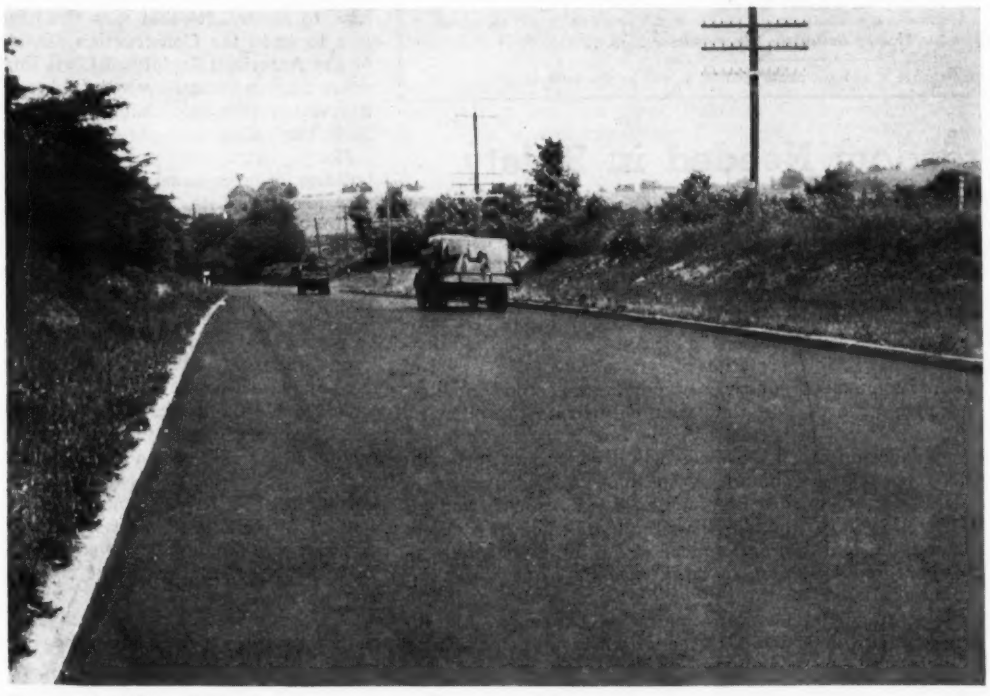
How the highway transportation system happened to get out of balance is easy enough to understand. The problem faced at the beginning of the automotive age was how to produce a vehicle that could provide a service that was cheaper and better than what the horse had to offer. There was no reason for concern over the lack of adequate highways until the vehicle had proved itself capable of requiring them. Until the end of World War I, therefore, major effort in the field of highway transportation was directed to achieving durability and reliability in the vehicle, and to developing production processes which would reduce costs. As soon as this objective was in sight, the demand for hard-surface roads became an urgent problem. But the almost incredible expansion of automobile ownership and use which followed left little time for careful highway plans or orderly highway development. In the race to furnish the new vehicle with ways to get about, it was not a question of building roads adequate for the future, but of providing facilities reasonably usable for immediate requirements.

The approach taken to meet this demand was the only one feasible at the time. We gratefully adopted the roads inherited from the horse, straightened and widened them here and there, and hoped that what had proved adequate for the vehicle of the past would serve

(*Continued on page 97*)

*Mr. Owen is author of the recently published book "Automotive Transportation—Trends and Problems", a thoughtful and detailed analysis of this nation's highway transportation development, problems, and future.

For this New Jersey State Highway



Texaco Asphaltic Concrete paving on State Route 28 (US 22) near Clinton, N. J. Constructed with asphalt mix furnished by Somerset Crushed Stone Inc. of Bernardsville, N. J.

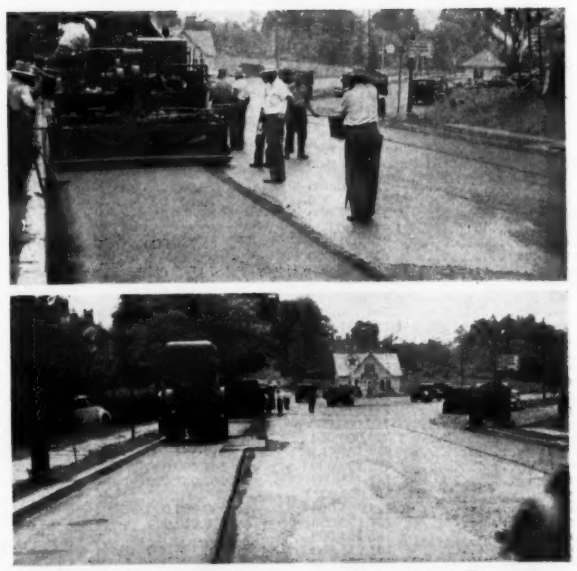
a pavement that absorbs impact, resists wear, needs no joints

Texaco Asphaltic Concrete

On New Jersey's Route 28, just as on US 81 in Texas, Worcester Turnpike in Massachusetts, New York's Route 17 and Illinois' Route 37, you will find heavy-duty Texaco Asphaltic Concrete paving. These and many other States know from experience on their own highways the ability of this hot-mix, hot-laid type of Asphalt pavement to stand up under the heaviest State Highway traffic. Not only does Texaco Asphaltic Concrete possess rugged endurance, but it has demonstrated conclusively by actual performance its low upkeep cost.

Pave primary highways, important city streets and major airports with Texaco Asphaltic Concrete. Salvage existing pavements serving exceptionally heavy traffic by using them as foundation for a new Asphaltic Concrete wearing surface.

Helpful information on Texaco Asphaltic Concrete and the other plant-mixed types of Asphalt paving is provided in the booklet, "Texaco Asphalt Paving—Plant-mixed Types." You can secure a copy with no obligation by writing our nearest office.



The Texaco Asphaltic Concrete on New Jersey's Route 28 was laid in one or two courses over the existing worn concrete and bituminous pavement.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO ASPHALT

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More Freedom Needed in Safety

Supervisors on America's construction jobs need more freedom in their interpretation of safety rules.

Last summer a representative of this magazine visited a contractor's dipper dredge at work in the Mississippi River above Minneapolis. No safety skiff was tied to the stern of the dredge. Yet, in spite of the absence of this common-sense precaution, all the men aboard were wearing kapok life preservers.

The Resident Engineer apologized for the rule when he handed our representative a life preserver.

"You'll have to wear this while you're aboard, mister," he explained. "I don't like the rule but I've got to enforce it."

The day was as blazing hot as August can be in Minneapolis. The humidity was scarcely bearable. Dredgemen went about awkwardly with their freedom of movement inhibited by the life vests.

Further examination of the dredge disclosed a yawl on top of the cabin, swung loosely from the davits. The explanation was, "That's our safety skiff. The rules say it's got to be up there."

CONTRACTORS AND ENGINEERS MONTHLY is 100 per cent in favor of safety rules which make good sense. Other examples of the lack of freedom in the interpretation of safety rules on the part of supervisory personnel could be cited, but they would illustrate the point no better than this one.

We believe that any safety program should be so inherently sound as to deserve unquestioned respect from all hands. The foundation of any safety program depends on individual *willingness to work safely*. When the blind enforcement of safety rules makes a man uncomfortable or causes him to doubt, the condition is not conducive to willingness.

When a man has to apologize for a safety rule, or to follow it like a blind dupe, the regulation is not very good for the construction business.

The Nation's Highway Needs: Report Presents Grand Total

Last July, Senator Joseph C. O'Mahoney, Chairman of the Joint Committee on the Economic Report, asked the governors and highway authorities of all states to report on their highway deficiencies and needs. The responses to his inquiries were then turned over to the Bureau of Public Roads to be coordinated with data the Bureau itself had collected. Now the results of the study have been published by the Joint Congressional Committee in a booklet called "Highways and the Nation's Economy".

Reported Cost of Correcting Existing Highway Deficiencies

State	State Highways, Rural and Urban	County and Local Roads	City and Village Streets	Total Reported
Alabama	$ 234,000,000	$ 490,000,000	$ 120,000,000	$ 844,000,000
Arizona	150,096,000	70,000,000	37,000,000	257,096,000
Arkansas	239,468,000	66,000,000	24,000,000	329,468,000
California	1,415,000,000	389,287,000	760,713,000	2,565,000,000
Colorado	284,051,000	88,230,000	30,100,000	402,381,000
Connecticut	628,000,000	....	....	628,000,000
Delaware	99,000,000	20,000,000[a]	4,500,000	123,500,000
Florida	95,704,000	10,000,000	10,000,000	115,704,000
Georgia	539,341,185	638,325,000	50,000,000	1,227,666,185
Idaho	229,750,000	....	....	229,750,000
Illinois	1,128,895,000	564,864,000	825,158,000	2,518,917,000
Indiana	317,519,737	92,975,300	76,174,800	486,669,837
Iowa	482,282,155	463,134,514	....	945,416,669
Kansas	520,120,000	343,540,000	93,632,000	957,292,000
Kentucky	408,058,283	167,616,063	....	575,674,346
Louisiana	500,000,000	....	....	500,000,000
Maine	134,529,000	10,000,000	19,497,000	164,026,000
Maryland	700,000,000	....	....	700,000,000
Massachusetts	1,000,000,000	26,000,000	26,000,000	1,052,000,000
Michigan	879,507,582	319,654,300	235,748,805	1,434,910,687
Minnesota	490,900,000	261,700,000	86,200,000	838,800,000
Mississippi	147,735,000	267,961,000	73,096,000	488,792,000
Missouri	256,000,000[b]	....	....	256,000,000[b]
Montana	498,705,000	300,000,000	40,000,000	838,705,000
Nebraska	257,190,000	120,020,000	85,621,000	462,831,000
Nevada	86,264,000	....	....	86,264,000
New Hampshire	192,935,000	16,356,000	8,925,000	218,216,000
New Jersey	518,700,000	126,100,000	109,000,000	753,800,000
New Mexico	157,427,728	....	5,000,000	162,427,728
New York	1,763,739,000	....	....	1,763,739,000
North Carolina	132,000,000	200,000,000[a]	....	332,000,000
North Dakota	200,000,000	50,000,000	....	250,000,000
Ohio	2,480,000,000	902,000,000	1,127,000,000	4,509,000,000
Oklahoma	202,000,000	121,000,000	41,000,000	364,000,000
Oregon	270,000,000	105,000,000	65,000,000	440,000,000
Pennsylvania	960,576,000	....	....	960,576,000
Rhode Island	180,000,000	25,800,000	73,200,000	279,000,000
South Carolina	323,000,000	....	....	323,000,000
South Dakota	293,000,000	107,616,000	13,032,000	413,648,000
Tennessee	600,000,000	400,000,000	220,000,000	1,220,000,000
Texas	1,294,000,000	1,068,630,000	....	2,362,630,000
Utah	213,128,000	48,000,000	14,300,000	275,428,000
Vermont	100,438,350	38,870,575	10,520,600	149,829,525
Virginia	217,600,000	102,400,000[a]	80,000,000	400,000,000
Washington	300,000,000	62,523,000	38,925,000	401,448,000
West Virginia	486,609,500	300,000,000[a]	....	786,609,500
Wisconsin	300,000,000	45,000,000	....	345,000,000
Wyoming	137,360,800	27,500,000	10,000,000	174,860,800
District of Columbia	....	....	200,000,000	200,000,000
Total	$23,044,630,320	$8,456,102,752[c]	$4,613,343,205[c]	$36,114,076,277[c]

[a] State jurisdiction.
[b] Incomplete, major state highway needs only.
[c] The total estimated cost of correcting deficiencies on county and local roads, including the states not reported above, is $10,400,000,000; for city and village streets it is $7,700,000,000. The estimated total is $41,144,630,000.

Current deficiencies on the highways, streets, and roads of the nation, as indicated in the report, total $41,000,000,000. The largest single need—$23,000,000,000—is for modernizing our state highway systems and their urban extensions. The rest of the total reflects the needs of our city and village streets and local rural roads.

The accompanying table summarizes the findings by states. To secure a copy of the entire booklet, write to the United States Government Printing Office at Washington, D. C., and enclose 20 cents.

The ASCE Convenes For the 97th Time

The public construction dollar and how to stretch it—that was the headline topic in the Construction Division of the American Society of Civil Engineers during the society's annual meeting which was held January 18-20 in New York City.

Many extra-cost practices in the building of large dams fail to give commensurate results, according to Ross White, Vice President of the Houston firm of Brown & Root, Inc. He cited particularly the extra cost of refrigerating concrete, the use of manufactured sand where natural sand might be equally satisfactory, the clean-up of horizontal surfaces between lifts in mass-concrete work, and specifications which forbid the use of equipment such as belt conveyors for transporting concrete. Why not place more confidence in the ethics of the construction organization, he asked? "An appreciable percentage of administrative costs on government work could be saved by following this practice, without any loss in quality," he concluded.

The designer seeking economy in a concrete building will give the contractor plenty of opportunity for prefabrication, said Francis Tompkins, Chief Engineer of the Charles A. Tompkins Co., Washington, D. C. It is also important for designers to become familiar with actual construction procedures and for specifications to be kept as simple as possible.

Grant Bloodgood, Chief Construction Engineer of the U. S. Bureau of Reclamation, replied that the Bureau well realizes its responsibility to review continually all phases of its current $387,000,000 program to achieve maximum efficiency and economy. And methods of economy have been and are being worked out. For instance, research in the use of sulfate-resisting cement is expected to save over $20,000,000 in the next 20 years, he said. Design developments are realizing large savings in structures; so, too, with powerhouses of standardized design, camp buildings, wood-pole transmission-line structures, and small power substations. Mr. Bloodgood pointed out that the Bureau, in conferences with the AGC, is working to eliminate provisions in construction and supply contracts which are considered both inequitable and arbitrary.

W. E. Reynolds, Commissioner of Public Buildings, also saw possibilities for savings in the construction of large buildings. A building as a whole does not lend itself to belt-line assembly methods, he pointed out, but the individual parts that make up the whole do, and it is there that the construction dollar can be stretched. Correlated research will help, and a good start has been made by the Building Research Advisory Board of the National Research Council, he said.

Delegates who attended meetings of the Waterways Division learned that by the end of the present fiscal year, levee construction along the Mississippi River will be three-fourths complete; and as of January 1950, about 170 miles of its banks have been stabilized with revetments, another 255 miles remaining. They also heard progress reports on the development of Baton Rouge Port and the Algiers Lock. (See C. & E. M., February, 1950, pg. 5.)

A special tour of U. N. headquarters under construction in Manhattan was arranged during the convention. And in an address to the Construction Division, the newly elected ASCE President, Ernest E. Howard, consulting bridge engineer of Kansas City, Mo., outlined the civil engineer's part in attaining the objectives of the United Nations. Under President Truman's Point Four Program, he said, the engineer's full measure of service lies not only in the realm of executing details of engineering projects in agriculture, in irrigation, in transportation, in water supply and sanitation—but in the realm of policy making, broad planning, negotiation, finance, and administration. "The engineering profession will not fail to respond to the call to service," he said.

Other new officers for the society in addition to Mr. Howard are: Albert Haertlein, of Boston, Zone I Vice President; and F. C. Scobey, San Francisco, Zone IV Vice President. New directors are Otto Holden, Toronto, District 3; F. L. Weaver, Washington, D. C., District 5; G. H. Butler, Duluth, District 7; Louis R. Howson, Chicago, District 8; G. Brooks Earnest, Cleveland, District 9; W. J. Ryan, Tacoma, District 12; and G. W. Lamb, Topeka, District 16.

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Movie on Steel Construction

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"No no, Regan! 'Turkey in the Straw' has the accent on the off-beat, like this —rat-tat-TAT."

Lock 2 Under Way At Pearl River, La.

Walls Are of Steel Sheet Piling; The Gate Blocks Are Supported on Timber Piles

By WILLIAM H. QUIRK,
Eastern Editor

✦ THE Department of the Army, Corps of Engineers, project to provide a channel suitable for 6-foot navigation from the mouth of West Pearl River to Bogalusa, La., is slowly being realized. Starting at the mouth of the river, where it empties into the Rigolets at Lake Borgne on the Gulf of Mexico, the channel first ascends West Pearl River, then a lateral canal, and finally Pearl River itself as far as Bogalusa, 60 miles upstream. When completed, the channel will be 7 feet deep; bottom widths will vary from 80 to 100 feet.

The 20-mile-long canal section, with an 80-foot bottom width and 1 on 2 side slopes, has three locks. The construction of Lock 1, completed in 1948, was described in CONTRACTORS AND ENGINEERS MONTHLY, October 1948 issue, page 17. Locks 2 and 3 are now under construction with completion scheduled for this year. Lock 2, the details of which are set down here, is being built by T. L. James & Co., Inc., of Ruston, La., at an estimated cost of $1,762,547. The Maxon Construction Co. of Dayton, Ohio, which constructed Lock 1, also was awarded the contract for Lock 3 on its low bid of $1,333,505.50.

Compared with the work that went into the three large locks, the work remaining to complete the project is of considerably smaller scope and cost. It includes the construction of two sills to maintain the desired water level in the canal and river; clearing the low-water pools at Locks 1 and 2; also dredging and snagging the channel of Pearl River for the 10 miles between the upper end of the canal and Bogalusa.

Lock 2

Located near mile 42 on the lateral canal, Lock 2 is about 3 miles east of Bush, La., which is on State Route 484 and also on the Gulf, Mobile, & Ohio railroad, a shipping point for most of the materials used in the construction. The site is 3 miles west of Pearl River, whose sinuous meanderings were considered unsuitable for a navigation channel; hence the present canal job.

Lock 2 is 310 feet long x 65 feet wide, and will have a minimum lift of 15 feet. Depending on the stages of the pools, vessels will be raised or lowered from 15 to 20 feet. The lock walls are 33 feet high, from elevation 20 at the floor of the lock to elevation 53 on top of the wall. The two upper gate blocks are 31 feet wide at the bottom and 80 feet long, with bottom and top elevations of 15 and 59 respectively. The two lower gate blocks rise from a bottom elevation of 13 to 53 on top, and measure 74 feet long x 33 feet wide. An esplanade runs along the top of the wall.

The sides of the lock are steel sheet piles up to 70 feet in length, while the cut-off or diaphragm piling under the miter gates and gate blocks are shorter sections, not over 50 feet long. Part of the floor of the lock is a 12-inch concrete slab resting on a 6-inch blanket of gravel. Part is gravel only. The original plans calling for concrete footings under the gate blocks were revised to provide a foundation of timber piles, 33 to 57 feet in length. These were untreated piles, obtained locally, with 8-inch tips and 14-inch butts, and were spaced 3 feet on centers both ways.

Big Hole

At the outset of the project, a shortage in the long, steel sheet piling delayed the construction work nearly a year. Nevertheless, a big hole was excavated for the lock, measuring 500 feet long x 200 feet wide with an average cut of 30 feet in depth, and with 1½ to 1 side slopes. Excavation started early in 1948, and the material suitable for impervious fill was stockpiled for later use in the compacted rolled fills required for the anchor walls. The rest of the material was a sandy gravel very susceptible to erosion, which was overcome by several bulkheads constructed to protect the slopes and to prevent sloughing.

Excavation was handled by two draglines—an 803 and a 605 Koehring—with 65-foot booms and 2½-yard Yaun and 2-yard Page buckets respectively. They both cast out, and loaded to two Mississippi wagons and a bottom-dump Euclid. As was to be expected, ground water was encountered early in the excavation and wellpoints were in-

(*Continued on next page*)

C. & E. M. Photo
Looking south over the Lock 2 job at Pearl River, we see three of the Koehring cranes which T. L. James & Co. used—a 304, a 803, and a 605. The last is driving piles.

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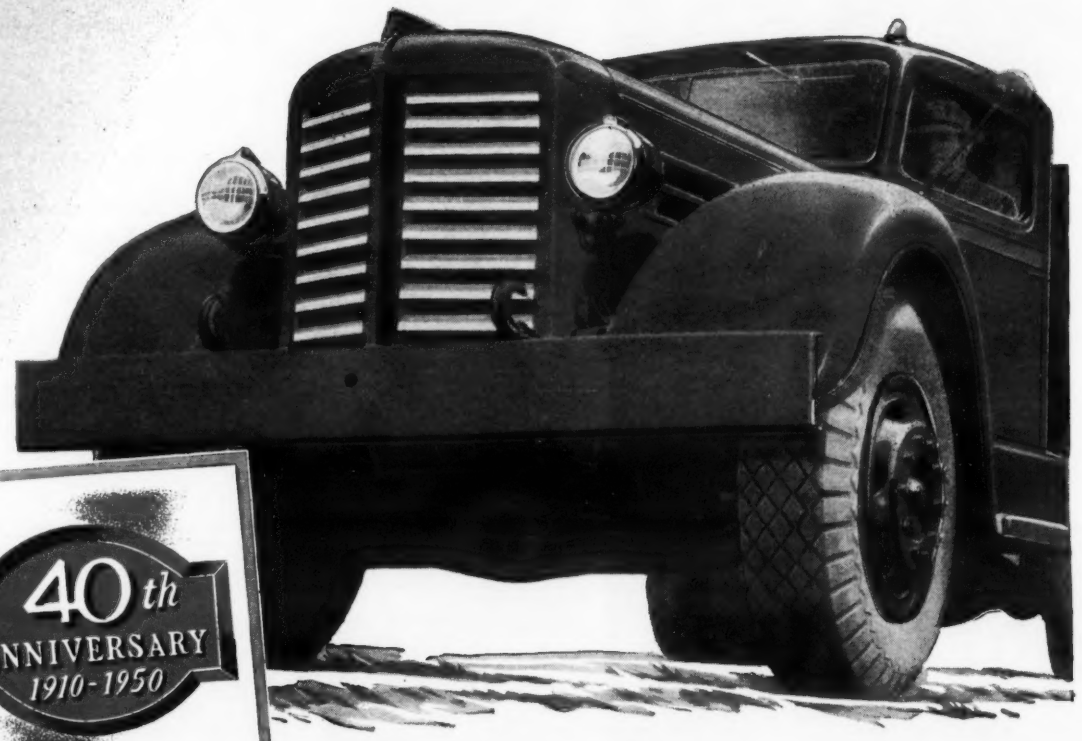

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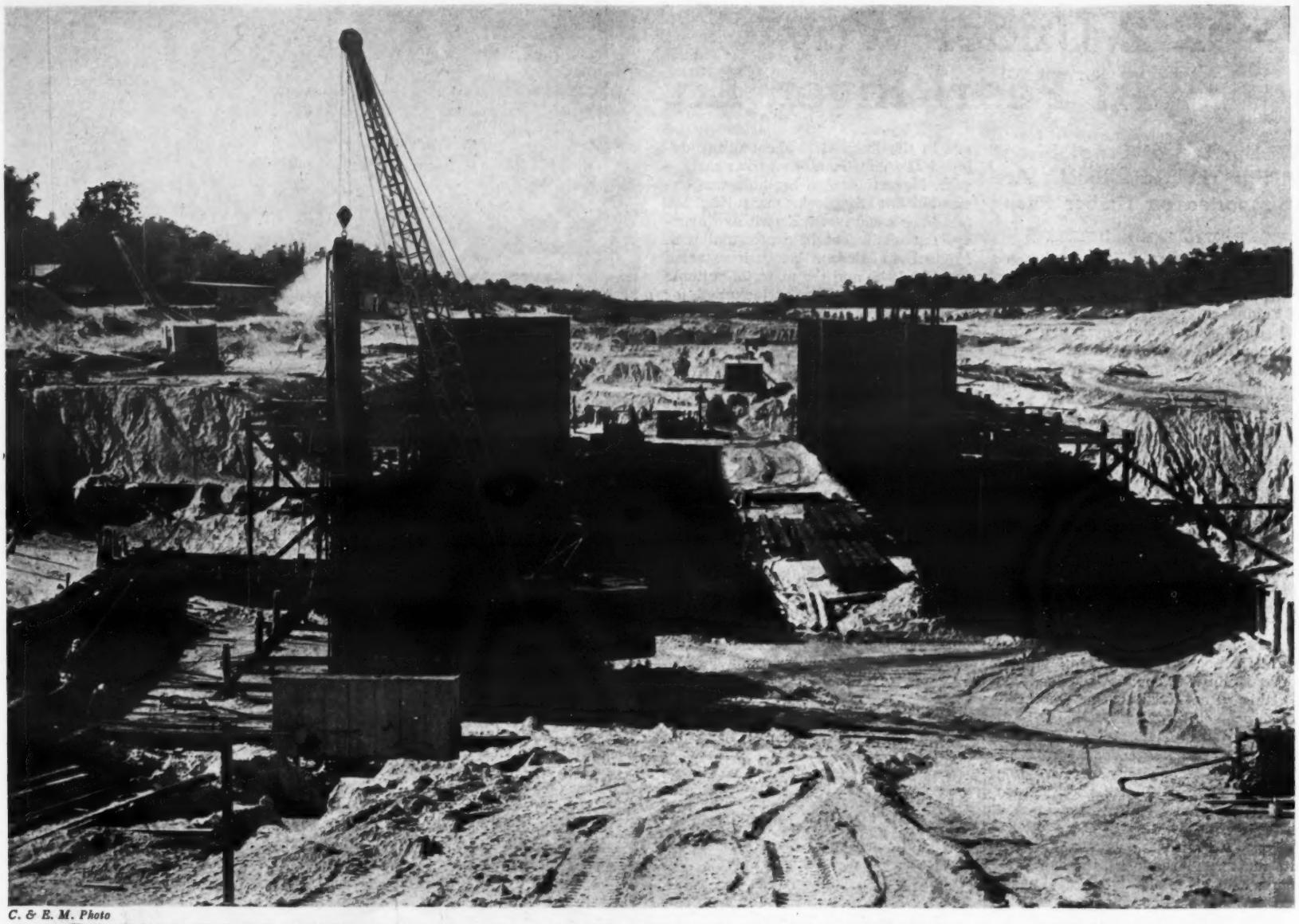
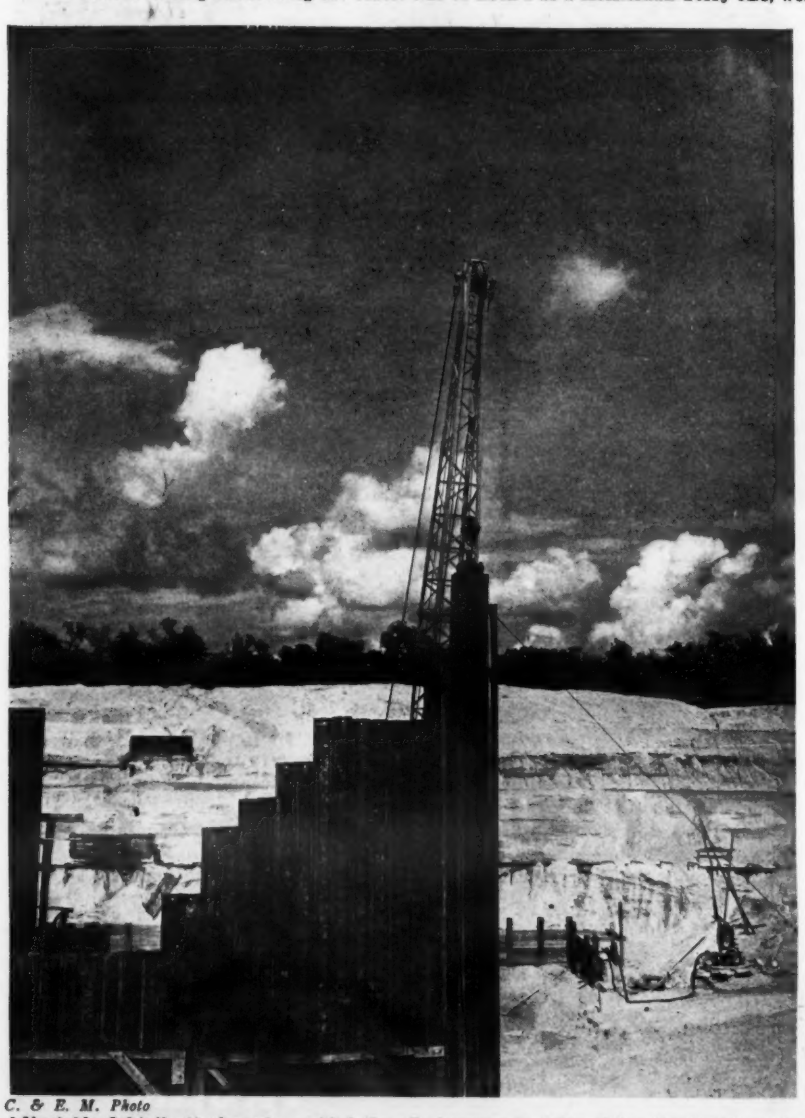


C. & E. M. Photo
You're looking north along the center line of Lock 2 as a McKiernan-Terry 9B3, working off the 65-foot boom of a Koehring 605 crane, drives MP-117 steel sheet piling.



C. & E. M. Photo
Adjustable fishtail attachments enabled the pile hammer to drive either the MZ-38 or the MP-117 pile sections required for lock walls and diaphragm or cut-off walls respectively.

Lock 2 Under Way At Pearl River, La.

(*Continued from preceding page*)

stalled to dewater the site. Most of the equipment was made by Complete Machinery & Equipment Co., with a few Moretrench pieces also in use. Altogether, 430 risers, 21 feet long, were required. These were spaced on 5-foot centers hooked to 8-inch header pipe. Four Complete 8 x 10 pumps were kept working, with an 8 x 8 serving as a stand-by. The system was installed on three different levels at various stages of the excavation. The lowest, plus 15, was in the gate-block areas only; the entire area was ringed with a header line at elevation plus 29; while the east side, closest to the river, also had a line at elevation plus 39. Natural ground is at plus 45.

The ground water was pumped out into either the upper or lower pool. The upstream pool was drained into the lower pool by an outfall pipe to prevent any possible flooding from above. This corrugated pipe between the two bodies of water was 24 inches in diameter and was laid in a 10 to 15-foot cut approximately 700 feet long in such manner that the drainage from the upper pool was by-passed around the lock site.

Steel Sheet Piling

After a considerable delay, the steel sheet piling for the lock began to arrive at the job site in February, 1949. It was supplied by two steel companies —Carnegie-Illinois Corp. and the Tennessee Coal, Iron & RR Co.—from plants in Pittsburgh and Chicago. For the lock walls, MZ-38 sections were driven, while MP-117 sections were used for the diaphragm or cut-off walls in the gate-block foundations. The steel was cleaned down to bright metal with power brushes, and then sprayed with two coats of Inertol, a coal-tar pitch enamel paint, by an Alemite spray unit. By May, all the steel piling had arrived and was properly sprayed with the protective paint.

As a template or guide for driving the long rows of piles, timber falsework was driven on both sides of each line. The bents were on 15-foot centers, and were capped with 6 x 12's, 14 feet long. To insure plumbness, timber guides were set at two levels, elevations 22.5 and 41.0, on both sides of the rows to be driven. Wedges were used in the final adjustments. When the falsework had served its purpose, the caps were removed from the bents outside the lock, but the rest of the timber structure was left in place. It served to support the horizontal steel tie rods which

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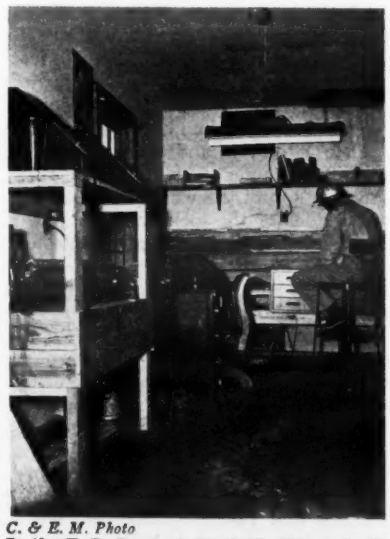
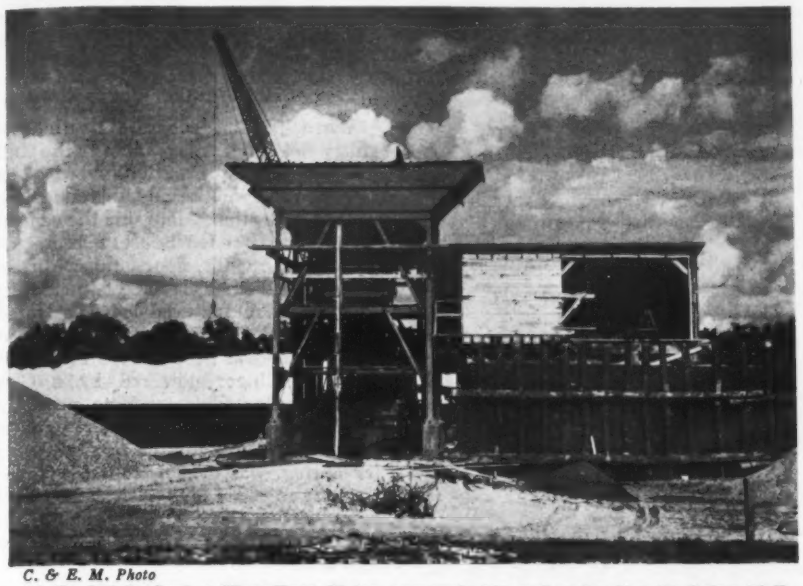


C. & E. M. Photo
In the T. L. James & Co. field office, a drafting table at the rear, a Friden calculating machine on the desk, and a Bruning Copyflex at the left.



C. & E. M. Photo
At the batch plant, a Blaw-Knox 75-ton aggregate bin and under it a Koehring 34-E Twinbatch paver. At right are the house for ice storage and the cement shed.

C. & E. M. Photo
Concrete was hauled from plant to lock forms in Blaw-Knox 1½-yard buckets. This Chevrolet truck has two welded angle-iron frames for carrying two buckets at a time.

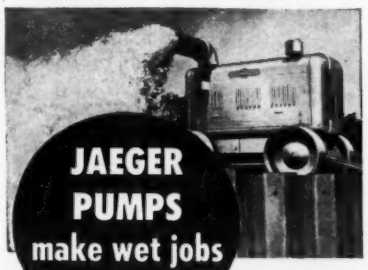
were designed to connect the lock wall to a row of steel anchor piling driven in a line 55 feet back from each lock wall. The tie rods are 2⅛ inches in diameter and 56 feet 10 inches long, equipped with turnbuckles for adjustment. They are on 3-foot centers. The anchor piles are of the same section as that used in the lock wall, and are 8 feet in length. The intervening space between the lock and anchor walls is to be backfilled with puddled fill for greater compaction. The falsework in the lock itself was removed as soon as the piling was driven.

The steel sheeting was driven by a McKiernan-Terry 9B3 hammer, steam being supplied by an International 50-hp vertical boiler burning diesel fuel. The long lock piles were handled and driven with the 803 Koehring using a 110-foot boom, and working along the outside of the lock. The shorter piles for the cut-off wall were driven with the 605 Koehring having a 65-foot boom. Two other Koehring cranes were also on the job—a 304 with a 50-foot boom and a 205 with a 40-foot boom. Both did miscellaneous work such as unloading and handling material and equipment, and later charging the concrete batch plant.

The pile hammer was fitted out with adjustable fishtail attachments by which either the MP-117 or the MZ-38 piling

(Continued on next page)

New 2" aluminum pump weighs 105 lbs., pumps 9000 gph . . . Gives high head performance for price of low head pump.



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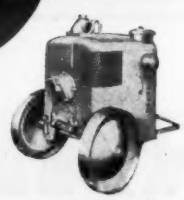

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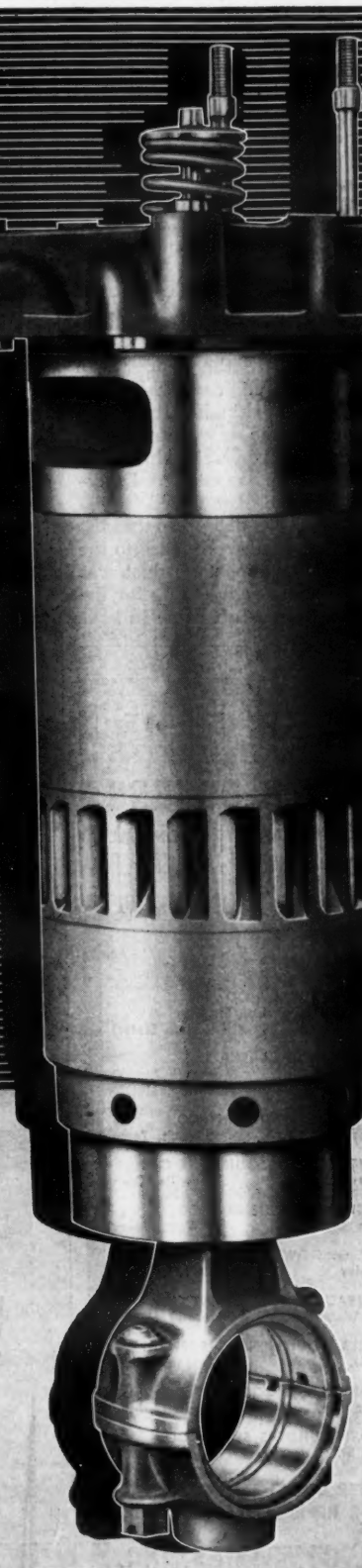

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Lock 2 Under Way At Pearl River, La.

(*Continued from preceding page*)

were driven. A special driving helmet was used in the driving of the MZ-38 piling. Only the anvil block was needed with the MP-117 sections; the fishtails were shifted when these piles were driven, so as to permit the hammer to straddle two piles at a time.

Concrete Work

In addition to the tie rods fastened to the opposite rows of anchor piling, the lock walls are braced on the inside by reinforced-concrete beams, running longitudinally along the base of the wall, with cross struts of the same material on 16-foot centers. The longitudinal beams average 3½ feet high with a variable width that averages 4½ feet; they are poured in sections 48 feet 9 inches in length. The cross beams are from 55 to 60 feet long and have a cross section 3½ feet square.

Mass plain concrete is used in the gate blocks and the 12-inch floor slab of the lock, bringing the total of concrete in the structure to over 10,000 cubic yards. Gravel and sand for the aggregate was obtained from a local pit at Sun, La., only 3 miles from the job site, while Lone Star bag cement was shipped in from New Orleans. Protex, an air-entraining agent, was added at the mixer. Rods and bars for the reinforced portions of the concrete were supplied by the Truscon Steel Co. plant in Gadsen, Ala.

The aggregate was stockpiled near the lock with the sand and gravel on opposite sides of a Blaw-Knox 75-ton bin. Directly beneath the hopper is a Koehring 34-E paver from which the boom, bucket, and skip had been removed. Alongside the aggregate bin, on a level above the paver, a shed had been built for storing the bag cement. Delivery trucks unloaded at the shed from a ramp. A chute was rigged up so that the aggregate and cement were fed into the paver drum. Some limestone dust was added to the mix to compensate for the coarseness of the sand. It came in bags from the National Cement Co. at Birmingham, Ala. The gravel had a maximum size of 1½ inches.

C. & E. M. Photo

Personnel on the Lock 2 job, left to right: Resident Engineer O. W. Tidwell, Superintendent J. R. Moss, Chief Inspector A. C. Britt, Project Manager Robert Hill, Assistant Resident Engineer E. C. Mardorf, Office Manager J. F. Taylor.

Hot-Weather Pours

When placing concrete during the sultry hot summers common to the Gulf Coast regions, precautions were taken to cool the concrete and to reduce the heat of hydration. Alongside the cement platform, a wooden house was erected with double walls, floor, and ceiling to contain a 6-inch layer of insulating sawdust. Manufactured ice was stored there in blocks which were crushed into shavings as needed by a Link-Belt Crusher Slinger powered by a G-E 7½-hp motor. This machine not only crushed the ice but also blew it into the paver. Water for the mix, and also for curing, was drawn from the upper pool by a Carver 3-inch centrifugal pump, driven by a Westinghouse 5-hp electric motor, into a 7,000-gallon storage tank.

The concrete was hauled from the

(*Concluded on next page*)

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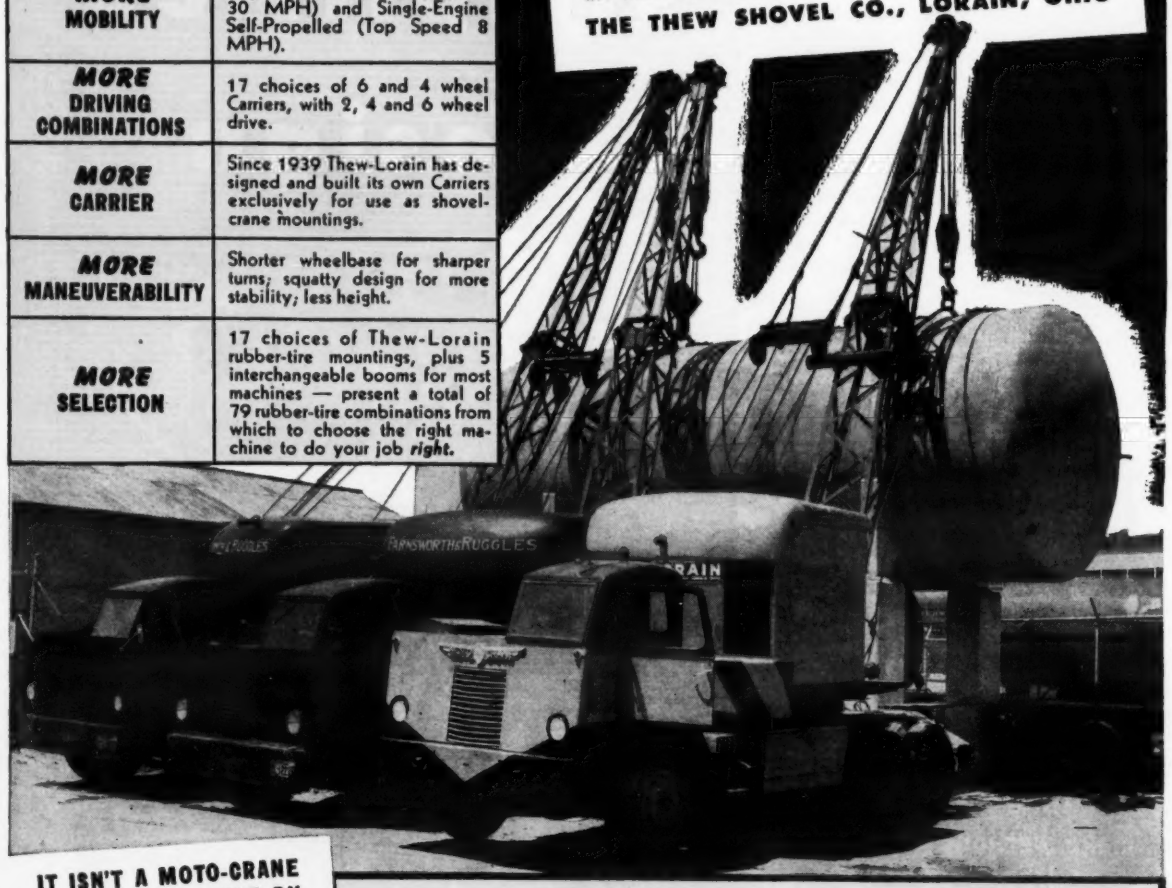

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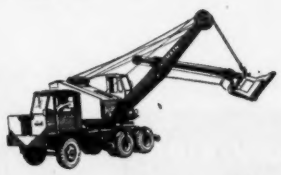

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plant to the forms in Blaw-Knox 1½-yard buckets. Frames of angle irons were welded to flat-bed trucks for holding two of these buckets, although the procedure was to carry one loaded bucket and return with an empty. Three trucks sufficed during the large pours. As the paver was set up on slightly higher ground than its surroundings, the trucks came in alongside for the buckets to get loaded right out of the drum.

As the concrete was placed it was vibrated with Ingersoll-Rand pneumatic vibrators, the air being supplied by a Gardner-Denver 105-cfm compressor.

Wooden Forms

A field shop was built on the site, consisting of a timber framework with galvanized metal sides measuring 30 x 40 feet. It contained a DeVilbiss air compressor; Delta drill press; Oster pipe-threading machine; Champion forge; National acetylene generator; Smith and Hobart electric welders; two Smith oxyacetylene welding sets; and two Black & Decker electric grinders, besides small tools, vises, etc. Power and light were obtained by tapping a near-by line of the Rural Electric Administration.

Wooden form panels for the gate-block construction were built near the shop with the help of a Multiplex 50A radial-arm table saw with a 16-inch blade, and a Delta band saw. Some portable tools, like Disston saws and drills, were operated off a couple of Kohler 15-kw generating plants.

The forms were built of 2 x 6 center match sheathing, backed with 4 x 6 vertical studs on 2-foot centers, forming panels 7 feet high and in lengths of 10, 14, and 20 feet. At the top and bottom of the panel was a 7-inch 25-pound steel channel acting as a wale. The only ties were along the top and bottom on 3-foot centers where Williams ½-inch rods were employed. Along the bottom, pig-tail hook bolts were embedded at least 12 inches into the concrete pour below, while at the top the tie slanted off into the concrete on a 45-degree angle. Safety scaffolds were incorporated at the bottom of the panels.

Each gate block was divided into two monoliths. The maximum height of any one pour was 5 feet 8 inches, thus making 10 lifts necessary for the concrete construction. The concrete buckets were lifted from the trucks to the forms by the cranes on the job.

Timber Piles

Untreated southern yellow-pine timber was driven as a foundation for the concrete gate blocks, sills, and struts of the lock. The 605 Koehring rig with a 75-foot boom and 85-foot telescopic steel leads handled the piles and the Vulcan 50C hammer used in the driving. Concrete operations got under way in July, 1949.

As part of the project, the contractor also built a 75 x 40-foot creosoted-timber wharf immediately downstream from the lock for storage of equipment required in maintenance of all the Pearl River locks. The material for the wharf was supplied by the Colonial Creosoting Co. of Bogalusa, La.

The Ingalls Iron Works of Birmingham, Ala., supplied the lock gates and miscellaneous structural steel, while the Mobile Pulley & Machine Works of Mobile, Ala., furnished valves, castings, and gate-opening machinery.

The contractor's well equipped field office contained a Bruning Copyflex machine on which all construction white prints used on the project were turned out. Job drafting was done in this office.

Shell Oil Co. supplied the necessary fuel and oil to service the equipment.

Quantities and Personnel

During the peak of the construction, T. L. James & Co. of Ruston, La., employed a force of 75 men on Lock 2. J. R. Moss is Superintendent; Robert Hill, Project Manager; and James F. Taylor, Office Manager. George D. Williams is General Superintendent with headquarters at Kenner, La.

For the Corps of Engineers, Mobile District, Otto W. Tidwell is Resident Engineer; E. C. Mardorf, Assistant Resident Engineer; and A. C. Britt, Chief Inspector. The Mobile District is headed by Col. W. K. Wilson, Jr., District Engineer.

The major items in the Lock 2 contract include the following:

Excavation	111,100 cu. yds.
Steel sheet piling, lock walls	39,790 sq. ft.
Steel sheet piling, cut-off walls, diaphragms	19,115 sq. ft.
Concrete	10,721 cu. yds.
Steel reinforcement	258,060 lbs.
Structural steel	233,870 lbs.
Timber foundation piles	62,000 lin. ft.

Tomorrow's Roads—Rubber?

Twenty-five years ago, a highway of natural-rubber blocks was installed on E. Market Street in Akron, Ohio, right in front of The Goodyear Tire & Rubber Co. home offices and Plant I. According to the company, the road has withstood the pounding of millions of cars and heavy trucks with little or no deterioration.

Obviously, the solid rubber blocks were too expensive to be used generally in paving and the idea did not progress. But since the war, many highways have been surfaced with rubber-asphalt mixtures and construction men are watching the results closely.

After inspecting several rubber roads laid in Holland before the war, P. W. Litchfield, Chairman of the Goodyear Board, says that rubber road surfaces last longer, show less tendency to bleed, are protected from seepage of surface water by the sealing action of the rubber-asphalt mixture, cost less to maintain, and shorten traffic tie-ups on roads under repair, since vehicles can move over rubber-asphalt a few hours after the material is applied.

Mr. Litchfield has the kiddies in mind, too. Surface the nation's playgrounds with rubber and banish those skinned elbows and knees, he urges.

Mass. Road Engineer Dies

Francis T. McAvoy, 61, of Jamaica Plain, Mass., Construction Engineer of the Massachusetts Department of Public Works, died January 16 after a short illness. He had served with the Department for over 37 years.

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HT4 Hydraulic TRAXCAVATOR® The Original Tractor Excavator

Pipes in the path of a ditching machine can be located with the Detectron.

New Pipe Detector

A new pipe detector has recently been placed on the market by the Detectron Co., 5637 Cahuenga Blvd., North Hollywood, Calif., manufacturer of electronic instructions. Innovations for the device are its aluminum case and its new-type carrying handle.

The shielding action of the aluminum case is said to insulate the loops against outside interference from power lines and trolley wires. It results in a more efficient instrument because the wave patterns are "smoothed out" and more easily controlled, according to the manufacturer, and it makes for greater accuracy of the detecting mechanism. The metal case also makes a more rugged instrument of the pipe detector.

The detector, known as the Model 505, can be used for detecting the location of an unknown pipe or cable, tracing a known pipe, or centering an existing pipe within a fraction of an inch of its actual position; and in many cases determining the depth of a pipe. The company says that untrained personnel can use the instrument after brief instruction or after a few minutes' study of the operating booklet.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 10.

Line of Truck-Mixers

A new line of lightweight Blue Brute truck-mixers has been announced by the Ransome Construction Equipment Division of Worthington Pump & Machinery Corp., Dunellen, N. J. They have a patented pressed-blade design to give fast, clean discharge of low-slump concretes. A large unrestricted hopper opening speeds charging. Mixing is unusually fast and thorough, according to the company.

Typical of the design innovations and refinements incorporated in the new machines are: an improved overflow-type water tank of simple design, equipped with nonbreakable gage glass and a nonfreeze water valve; a renewable drip ring; mix and discharge control clutches mounted on the ends of shafts for quicker adjustment and replacement when necessary; a foot-operated automotive type of accelerator for engine speed control; a simple two-speed transmission; greater overall flexibility; and decreased weight by the use of chain drive. Along with lightening the weight (by approximately 7,000 pounds for the 4½-yard Hi-Up model), Worthington-Ransome engineers have moved the center of gravity forward on these machines to improve payload distribution.

Fast trouble-free operation and ease of maintenance were the goals when this new Blue Brute truck mixer was designed.

The new truck-mixers are available in 2, 3, 4½, and 5½-cubic-yard inclined-axis sizes (3, 4¼, 6⅛, and 7⅜-yard agitator capacities) and in 4½ and 5½-cubic-yard horizontal sizes (6⅛ and 7⅜-yard agitator capacities). All ratings are according to National Ready Mixed Concrete Association standards.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 130.

BARTLETT MFG. CO.
Tree Trimming Equipment

TREE PAINT — ROAD SIGNS

Automatic Type Tripod standard can be set up instantly. Will not blow over. Folds in a flash for compact carrying. Sturdy construction. 4 Ft. Automatic Type (illustrated) has locking cam for tripod legs, and 18" x 18" metal sign.

Sample stock wordings: "DANGER," "MEN WORKING," "MEN WORKING ABOVE," "MEN WORKING IN TREES," etc.

Write for Catalog No. 31—
Showing Tree Trimmers, Pole Saws, Hand Pruning Saws, etc.

NOW AVAILABLE

Bartlett tree paint for application to tree wounds. Will not freeze.

TRADE MARK COMPOUND

BARTLETT MFG. CO.
3035 E. GRAND BLVD.
DETROIT MICHIGAN

Base course and sub-grade failures cost more today than new construction!

Stop that waste!

BUILD DURABLE, HIGH DENSITY, STRONGLY KEYED, LOW COST ROADS WITH THE NEW SEAMAN SELF-PROPELLED TRAV-L-PLANT

NEW SEAMAN Self-Propelled TRAV-L-PLANT. Mixing width: 7 ft. Gas or Diesel powered. Equipped with spray bar, pump, pump tachometer, and tachometer wheel. For bitumen or water.

Millions of miles of highways are breaking down today due to earlier limited budgets and lack of low cost, scientifically engineered mixing equipment to build strong, high density bituminous and soil stabilized pavements.

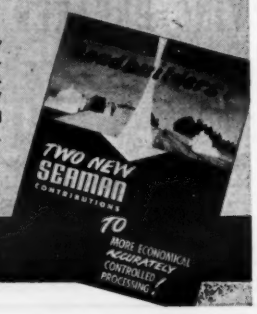
So, now we pay the piper — $1.72 in temporary repairs for every $1.00 of new construction!

Today, with the SEAMAN Self-Propelled MIXER or the Self-Propelled TRAV-L-PLANT mixing and blending of binder, aggregates and fines are so thorough and so scientifically correct that pavements of those types endure for years. And the SEAMAN produces such a remarkably high hourly tonnage and is so economical in labor that construction costs easily meet limited budgets.

So, do your mixing with a SEAMAN. Stop the waste that robs new construction funds.

NEW SEAMAN Self-Propelled MIXER. Mixing width: 7 ft. Gas or Diesel powered.

Here's a folder completely describing the NEW SEAMAN Self-Propelled TRAV-L-PLANT and the NEW SEAMAN Self-Propelled MIXER. Send for it—now.



SEAMAN MOTORS, INC.
282 North 25th St., Milwaukee 3, Wis.

New Work Improves Iowa State Route

Crushed-Limestone Base And Asphalt Penetration Surface Treatment Make First-Class Road

+ IOWA continues her fight to put as many of her people as possible on hard-surfaced highways. One of the focal points of that effort last year was on State Route 78 between Richland and Martinsburg, where a 11.9-mile section was improved by the West Des Moines contracting firm of Kaser Construction Co.

The Iowa State Highway Commission used native crushed limestone and an asphalt surface treatment to build the present highway. While its type is not elaborate, the asphalt penetration surface with the underlying rock base gives local residents and some through short-cut automobiles a fine new road on which to travel. With a 24-foot paved surface, the highway is several feet wider than many of Iowa's concrete slabs.

The section between Richland and Martinsburg has been under improvement for some time. The easterly 5 miles, on the Richland end, was graded by contract in the spring of 1948. Adjoining this portion was 3 miles of old secondary road, built in 1932. The western portion of the contract was completed under a separate grading arrangement so recently that C. R. "Dutch" Whalen, Kaser's General Superintendent, had to start on the eastern end of the job.

The Kaser contract included all work necessary to treat frost-boil damage in the existing grade, certain grade raising, the production and installation of a 6-inch crushed-limestone base, and a double inverted penetration treatment with MC-4 asphalt and crushed limestone. Although work did not get under way until July 11, it was expected that the job would be finished and cleaned up by the end of October, well ahead of the fall rains.

Whalen was taking no chances of running overtime, because the contract carried a $100-per-day liquidated-damages clause, and it would have been bad business to carry the project longer than absolutely necessary. In fact, the genial Superintendent built his 6-foot earth shoulders after the rock sub-base was primed, to get that vulnerable phase out of the way ahead of the wet weather.

Preliminary Grading Necessary

While a great deal of contract work had been done on the 11.9-mile stretch of highway, age and use had taken a certain amount of toll, particularly through the 3-mile section which had been carrying traffic since the early 1930's. In order to bring the road up to a uniform high density, it was necessary to repair frost-boil damage in some places, to scarify the gravel surface for stabilization in others, and to build with glacial clay certain grade changes where the embankments were low, or the soil too poor. The highway lies in the heart of Iowa's best corn country, and the soil is either clay or black, heavy loam.

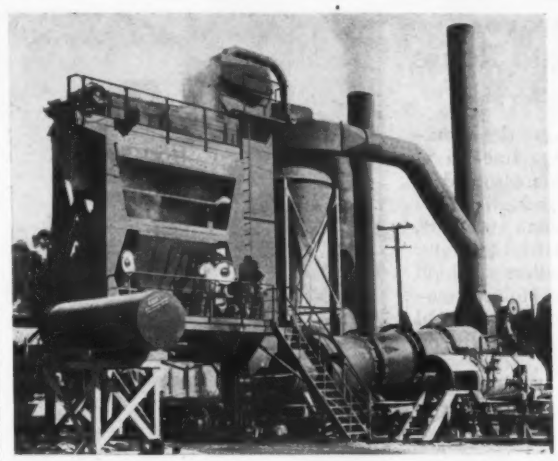
Old frost boils, still gooey in July, were removed to a depth of from 18 to 24 inches. Two 14-cubic-yard tractor-scraper units, rented from J. P. Strother Construction Co., did this work. Strother was the grading contractor on the western part of the project, and was in a fine position to perform this work for Kaser.

The excavated frost boils were then backfilled with hard, glacial clay, found throughout the surrounding country side. Several shoulder borrow pits were designated, and a 2-yard Northwest dragline and 6 dump trucks were used to bring the material in. This material, with the clay for grade raising, was sprinkled with moisture and rolled by a pair of the compaction units on the project.

With the patchwork finished, Kaser's machines then moved to the east end of the contract to start a systematic program of "finishing as they went". The old road was scarified to its full 36-foot width, using 3 Caterpillar No. 12 motor graders. The roadbed was scarified 6 inches deep, and the material was then windrowed, rolled over a few times to mix the soil and whatever gravel was left, and laid back down. Moisture was added, and the earth went back in 3-inch lifts. The subgrade was then compacted by as many roller passes as it took to develop a minimum of 95 per cent standard Proctor density.

Rolling and grade preparation was

(*Continued on next page*)



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STANDARD is one of the oldest and largest builders of paving plants—many types for all conditions. Used throughout the world. Modern, Unit-built, easy to erect and transport.

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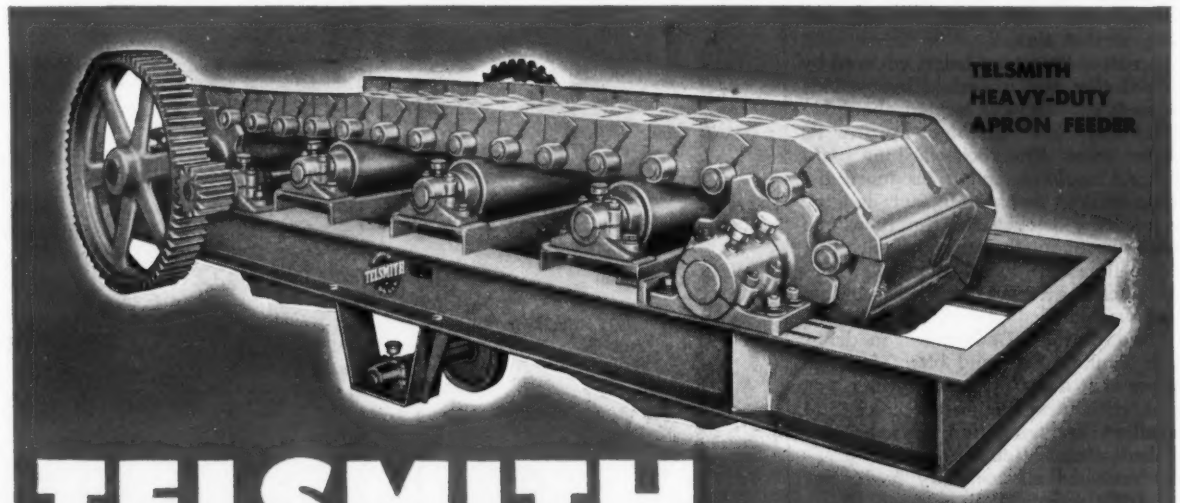

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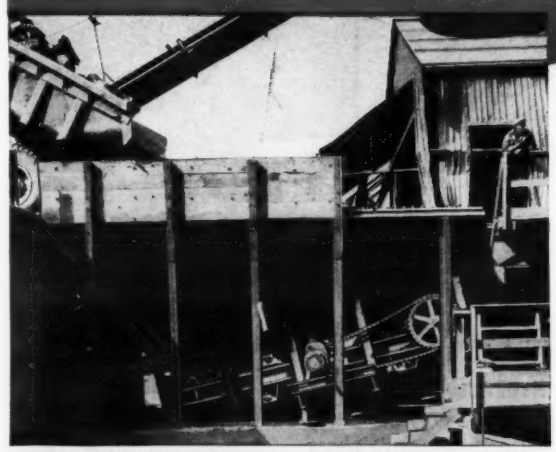
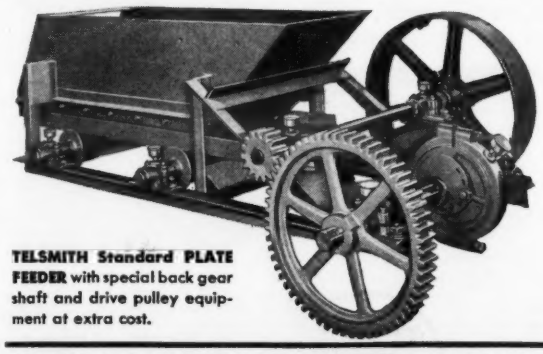
more economical feeders



NEW ENTERPRISE STONE & LIME CO., ASHCOM, PA.—36-in. x 10-ft. Telsmith Heavy Duty Apron Feeder takes 15-ton loads; feeds a 25-B Telsmith Primary Crusher.



TELSMITH Standard PLATE FEEDER with special back gear shaft and drive pulley equipment at extra cost.

● Keep your conveyors, screens and crushers working smoothly and at full capacity. Telsmith Apron or Plate Feeders insure steady, uniformly regulated flow of material to entire plant—boost your output and cut cost of up-keep.

APRON FEEDERS are self-contained units on heavy structural steel frames. **Heavy-Duty Apron Feeders**—with carbon, or manganese steel flights—handle the toughest jobs, such as feeding primary crushers, either jaw or gyratory. **Standard-Duty Apron Feeders**—equally sturdy, but weigh less. Apron Feeders are made in 24-in. to 72-in. widths, with capacities from 25 to 700 tons per hour. Furnished with heavy steel hoppers, at extra cost.

PLATE FEEDERS are simple in design—sturdy in construction. Adjustable stroke regulates capacity. Made in both Standard and Heavy-Duty models; widths 16-in. to 48-in.; capacities 12 to 400 cu. yds. per hr.

Send for Bulletin 266

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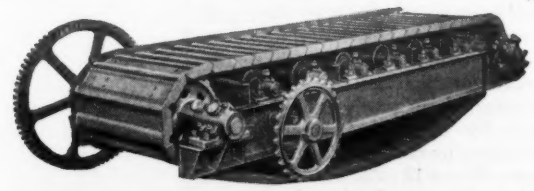

TELSMITH Standard-Duty APRON FEEDER—Raised edges of its ⅜-in. steel flights prevent spillage.

SMITH ENGINEERING WORKS, 4014 N. HOLTON STREET, MILWAUKEE 12, WISCONSIN

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New Work Improves Iowa State Route

(*Continued from preceding page*)

carried full width, including the shoulders. An unusually large line-up of compaction equipment was assigned to this job. There were 4 new double units of LeTourneau sheepsfoot tampers, pulled by Oliver 900 industrial tractors; 4 Grace pneumatic rollers behind Oliver and Minneapolis-Moline machines; and a 12-ton Huber steel-wheel roller, which was used principally on rock sub-base compaction.

Since the highway was closed to traffic, with detours around the project, nothing but local automobiles interfered with the machines. Even the local farmers soon learned that motor graders had the right-of-way over any other kind of traffic on the grade.

Limestone Quarried and Crushed

Approximately 63,000 tons of crushed limestone was required, or almost 5,000 tons per mile. Production of this material was subbed to Concrete Materials & Construction Co., because Kaser's rock-crushing equipment was all very busy at that time.

A native limestone ledge, covered by glacial clay and underlaid by a sandstone formation, was located about 1¼ miles away from the highway near its center point. The rock-crushing plant was set up here, and it produced the stone without trouble. In fact, dodging a few clay pockets in the limestone ledge was about the only obstacle.

The limestone ledge was drilled and shot ahead of the crusher. Holes 18 feet deep were drilled on 4 x 5-foot centers, by two Gardner-Denver wagon drills, with Timken steel and bits. Hercules 60 per cent extra-strength powder was used, without springing the holes, and excellent fragmentation was accomplished. One 500-cfm Le Roi compressor furnished all necessary power for the drills.

A Link-Belt Speeder LS-85, carrying a ¾-yard dipper, loaded out the broken rock. The power shovel fed the broken stone direct to the first portable crushing unit; a Caterpillar D8800-powered 20 x 36 Cedarapids jaw crusher, with a home-made feeder and a Cedarapids trap. This unit, mounted on rubber tires, was so portable that it could be moved in about 15 minutes if necessary to keep up with the shovel.

From the primary unit, limestone passed direct to the Cedarapids secondary crusher and sizing unit. Driven by a twin General Motors diesel engine, the secondary machine contained dual 4 x 12 screen decks, and a Williams 40-inch hammermill. The material was pulverized to its final size in this secondary unit, and then traveled over a belt conveyor to a small surge bin, which loaded the hauling trucks.

Electric power for night lighting and auxiliary conveyor motors came from a 75-kw Caterpillar diesel electric set.

Iowa state specifications controlled to rigid limits the sizes of rock. Specifications for base-course material were:

Size Sieve	Per Cent Passing
1½-inch	100
¾-inch	75-100
No. 4	40-75
No. 40	15-35
No. 200	9-22

Samples were taken every day, and the production watched carefully, to insure that the material met these requirements at all times.

The crushed rock was hauled to the highway by a fleet of International dump trucks, owned by Chester Gee of Ottumwa. From 18 to 30 machines were used, depending on the length of haul. These haul units had to move in 10 hours the average 2,100-ton production of the crushing plant, which worked 24 hours a day to keep things humming. The loads were dumped on the new subgrade, according to measurements made by a state dump man.

C. & E. M. Photo

After a hard scramble to the top of the quarry, the C. & E. M. cameraman photographed this Cedarapids rock crusher which produced stone for the Iowa State Route 78 project.

Processing the Base

The 8-ton average-weight loads were laid down along the north quarter point in order to give the trucks a place to turn and pass. The scheme also let other equipment work close by.

A section about 2,500 feet long was usually processed at a time. First of all, the dumped material was flattened down by a pass or two of a Caterpillar No. 12 motor grader. After being flattened so trucks would pass over it easily, it was ready for the addition of moisture.

Water, as a matter of fact, was one of the main job problems. It was hard to find, and difficult to distribute uniformly. Whalen's men dammed up three small streams and used an abandoned mine, filled with water, to get the moisture they needed. Each water source had a 3-inch pump, which filled the tankers. Three of the trucks carried 1,640-gallon sprinkler tanks, while two carried 1,000-gallon bodies. All water trucks were equipped with 1½-inch

(*Concluded on next page*)

Get
per
BETTER HYDRAULIC OPERATION
Use *Texaco Regal Oils (R & O)* as hydraulic mediums. These turbine-grade oils guard against sludge and rust formations, prolong pump life, assure smoother operation, reduce maintenance costs.
TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.
TEXACO
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Jaeger pumps, which maintained a uniform pressure while the water was being applied. This cured the problem of uneven distribution.

The moisture was applied in two heavy passes, with the material taking an average optimum content of 7½ per cent.

The material was bladed into a windrow. It was then road-mixed to equalize the water and obtain a uniform mixture of rock particles. This was done by rolling the windrow by repeated passes of a motor grader to the far side of the highway. It was left to set about 12 hours, usually until the following morning.

To lay the material, the motor graders cut in to the windrow a little at a time, and spread the rock to edge lines established by 6-inch offset survey stakes. As the graders cut the material out and spread it in 3-inch lifts, every roller on the job was busy. The four sets of sheepsfoot rollers and all the pneumatic machines followed the blades. Specifications required 100 per cent compaction on the sub-base, and it often took about 12 passes to get that result.

C. & E. M. Photo
A No. 12 Caterpillar grader, two rollers, and a water truck process subgrade ahead of rock dumping on the Kaser Construction Co. job.

The spreading and rolling operation was perhaps the most critical of all field steps. On dry, sunny days the crushed limestone shed its moisture, while on dark cloudy days it retained it. The water-truck operators got very good at estimating the water loss, while the rollers were working, and replenishing any water lost through evaporation.

The last rolling consisted of a shot of water, and a pass by the 12-ton Huber steel-wheel machine. This smooth, heavy roller mashed all the large rocks down in the surface, and obtained enough of a slush-rolling effect to make the surface dense and tight. Swept just ahead of the prime coat, the rock surface resembled concrete.

After a section was finished, the surface was sprinkled lightly from time to time, and any places which seemed a little soft were re-rolled until they developed a density which would pass minimum limits.

Asphalt Penetration Treatment

Asphalt for the surface treatment was shipped in by rail, and the tank cars were spotted on the rail siding at Richland. A subcontract agreement was arranged with Western Engineering Co. to haul and apply the bitumen.

The rock sub-base surface was primed by an application of 0.2 gallon per square yard of MC-O asphalt. This was then followed by 0.3 gallon over the outer edges. It was applied 2 feet wide at these points.

After the prime coat had set for about 24 hours, the surface was then shot with 0.3 gallon of MC-4 per square yard. This fresh oil was then immediately covered by 30 pounds of ¾-inch maximum-size limestone chips, which were rolled down by the Huber roller. A second 0.3 shot was then applied, another spreading of chips, another rolling, and with the exception of a bit of sweeping, the operation was finished.

Completion of the project gives many of the local residents cause for rejoicing, because the new construction is expected to eliminate frost-boil trouble and give traffic an all-year all-weather hard-surfaced highway.

Personnel

The project was designed and supervised under the general direction of Fred R. White, Chief Engineer of the Iowa State Highway Commission, with A. A. Baustian as Construction Engineer and Carl H. Parker as Resident Engineer. C. R. "Dutch" Whalen directed field operations for the Kaser Construction Co. on this and several smaller but similar jobs going on last year in that part of the state.

Operation and Maintenance Of Steam Cleaning Units

Two useful booklets for the repair and maintenance man are offered by The Du Bois Co., Cincinnati 3, Ohio, on steam cleaning, its applications, and the operation and maintenance of the cleaner units.

The first booklet offers an introduction to the problem of cleaning buildings, machinery, trucks, etc. It describes generally the principle of steam cleaning and indicates compound requirements such as detergent and rinsing properties, safety and convenience to personnel, and the effect of the compound on steam cleaning equipment. It also lists the applications for Sprex AC, a compound recommended by the company for all-around use. This product is said to contain a maximum of water-conditioning agent and to have excellent wetting and emulsifying properties. Dyna Sprex, a much more alkaline material, is recommended for heavy-duty steam cleaning where Sprex AC is not sufficiently alkaline for the cleaning of heavy soils.

The second booklet explains how steam cleaners operate and is illustrated with a diagrammatic plan of a typical unit. General rules for operation, maintenance, starting, and stopping are given as a guide for the reader. Also included are some general hints on cleaning, and a do-and-don't list in using steam cleaners.

Copies of these two booklets may be obtained from the company, or by using the Request Card at page 16. Circle No. 94.

more footage drill, per shift

TEXACO ROCK DRILL LUBRICANTS EP
protect drills against rust and wear

Rust and wear — chief causes of short drill life and reduced efficiency — are no problems when you lubricate with *Texaco Rock Drill Lubricants EP*. These "extreme pressure" lubricants ward off wear under the severest operating conditions, and inhibit rust whether drills are running or idle.

In addition, *Texaco Rock Drill Lubricants EP* resist wash-off . . . stay fluid at low temperatures . . . keep parts free of carbon and gum formations. Your drills get lasting protection. You get more trouble-free operation . . . more footage per shift . . . longer drill life . . . lower maintenance costs.

Texaco Rock Drill Lubricants EP meet the exacting specifications of leading rock drill manufacturers and the Compressed Air and Gas Institute.

Another step to improve drilling efficiency is to make sure your air compressors deliver full volume and pressure. You can do this, regardless of your operating conditions, by using the recommended Texaco air compressor oil.

Let a Texaco Lubrication Engineer help you increase efficiency and reduce costs in all your operations. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

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The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

A close-up view of the new Banox dispenser attached to the Tarco Scotchman chemical spreader.

Adds Rust Inhibitor To Ice-Control Salt

A metering dispenser for adding the recommended amount of the rust inhibitor Banox to salt is announced by the Tarrant Mfg. Co., Saratoga Springs, N. Y. Designed as an attachment to the company's Scotchman chemical spreader, the new dispenser permits addition of Banox in the proper amount while the truck carrying the spreader is in operation.

Banox, a rust inhibitor added to de-icing salt, is manufactured by Calgon, Inc., Pittsburgh, Pa. Various methods have been devised by individual users of de-icing salt for mixing Banox with the salt, but the new Tarrant dispenser is said to be the first "mix as you go" approach to the problem.

The dispenser has a capacity of 23 pounds of Banox. It is made of painted steel, with a stainless-steel valve. A cover on the hopper protects the rust inhibitor between uses. The new dispenser is demountable and may be removed easily and quickly when the Scotchman chemical spreader is to be used for dispensing materials other than de-icing salt.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 53.

Heated Dump Bodies Aid Wintertime Work

Freezing and caking of material in dump bodies is a common occurrence during winter hauling operations. Because these loads are difficult to dump, time is lost and costs are increased.

For over a year Euclid Road Machinery Co., Cleveland 17, Ohio, has furnished units with heated rear-dump bodies to mine operators on the Iron Range in Minnesota. These "Eucs" have proved very successful in dumping their loads cleanly even in the lower temperature ranges, according to the company. Heated bodies are now optional equipment and are available on all Euclid rear-dump models ranging from 10 to 34-ton capacities.

Hot exhaust from the engine manifold is transferred through a flexible metal tube to the inlet in the bottom of the body. The double-wall construction of the bottom, front, and the lower portion of the sides allows the gas to circulate freely and be exhausted through a vent in the side. In localities that necessitate hauling during rainy seasons or jobs that require hauling of wet sticky loads, the heat will dry the material in contact with bottom and sides sufficiently so that the load readily sheds from the body when dumping.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 103.

Duff-Norton Sales Manager

The Duff-Norton Mfg. Co. of Pittsburgh has a new General Sales Manager — James F. McCartney. Since October, 1948, he had been Eastern District Sales Manager of the jack manufacturing firm.

Heated bodies to keep material from freezing or caking are now available on all Euclid rear-dump models from 10 to 34-ton capacities.

HOOKS, TONGS
GRIPS and
SLINGS
No. 464
366
No. 245
No. 421
A COMPLETE LINE OF HOIST GRABS—for fast safe handling of pipe, rails, drums, plate and structural steel, stone, timber, boxes and odd-shaped objects. Carefully engineered Downs Hoist Grabs have a safety factor much greater than capacity ratings listed. Many types of hooks, tongs, grips and slings available for quick delivery.
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LOS ANGELES 37, CALIF.
Electric Cranes • Hand Cranes • Jib Cranes • Sheaves • Sheave Blocks
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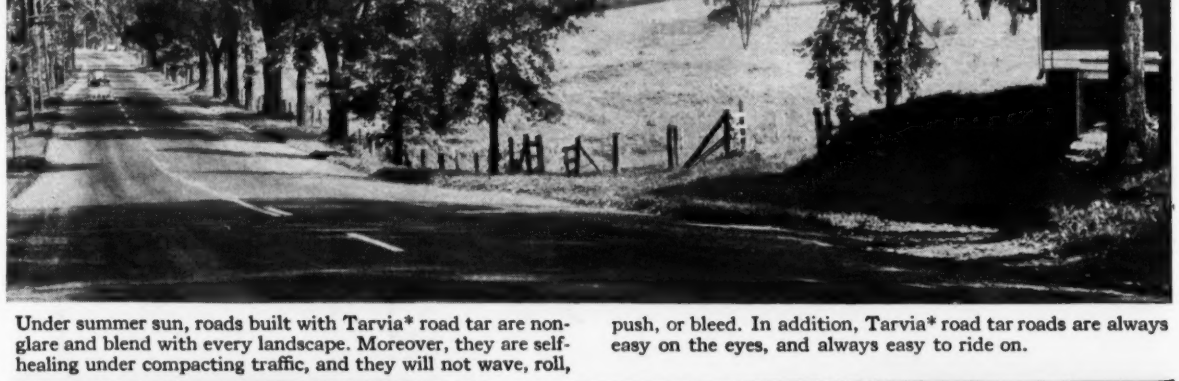
End Truck Units • Jib Crane Fittings • Automatic Mechanical Load Brake
Crane Hook Blocks

STANDS UP UNDER SUN OR FROST!



Under summer sun, roads built with Tarvia* road tar are non-glare and blend with every landscape. Moreover, they are self-healing under compacting traffic, and they will not wave, roll, push, or bleed. In addition, Tarvia* road tar roads are always easy on the eyes, and always easy to ride on.

When frost and snow comes, roads built with Tarvia road tar are easier to keep open. That's because their black surface absorbs heat—causing snow and ice to melt more readily. In addition, Tarvia road tar is not affected by either calcium chloride or sodium chloride.

Barrett's 46 years of experience in road building, maintenance and repair is yours for the asking. *Ask the Barrett field man.*

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Thanks to their slightly granular, "tractionized" surface, roads built with Tarvia road tar give tires a firm tread hold.

Barrett* Tarvia* ROAD TAR

*Reg. U. S. Pat. Off.

Timken's new one-use Spiralock rock bit was designed for jobs where bit reconditioning is either impractical or undesirable.

A One-Use Drill Bit

For drilling jobs where bit reconditioning is impractical or undesirable, The Timken Roller Bearing Co., Canton 6, Ohio, has produced a new one-use Spiralock rock bit. This latest addition to the Timken rock-bit line is made in a variety of types and sizes and features the Spiralock union.

The smooth socket contours permit quick attachment and easy detachment. The bit has a square socket which spirals slightly as it recedes, forming the Spiralock union designed to prevent the bit from coming off the steel in the hole. Other features include a non-choking back face, scalloped and rounded to prevent chips from packing behind the bit; a crowned chisel point for easy starting and centering; an X cutting edge to prevent rifling; simplified steel preparation and reconditioning, since the square steel ends simplify fitting; and quick adaptability to existing steel sizes and selections. These bits are made of Timken electric-furnace steel for fast cutting, long life, and uniform quality.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 112.

Rock Excavators Described

Three new bulletins describing the Marion Types 151-M, 4161, and 111-M Ward-Leonard electric machines are announced by Marion Power Shovel Co., 617 W. Center St., Marion, Ohio.

The 16-page bulletin on the 151-M describes this 6½-cubic-yard unit as "a heavy-duty machine throughout, built for continuous service in mining . . . quarrying, and slag handling." It can be used as either a shovel or dragline, and it incorporates individual exciter high-speed electrical controls; twin-rope, single hitch to the dipper; inside-type heavy-duty boom of all-welded construction; and extra-wide manganese self-cleaning non-clogging crawler pads. All controls are convenient to the operator; none are outside the cab.

The Marion Type 4161, a 5-cubic-yard machine convertible to both shovel and dragline service, finds application in quarrying, and big-scale construction projects. Features include close-coupled design for tough digging, conveniently grouped controls, Ward-Leonard electrical controls, low center of gravity, non-clogging dirt-expelling crawlers with enclosed drive, manganese-steel shoes, welded steel upper and lower frames, and individual motors for all drives.

The Marion 111-M Ward-Leonard electric machine is convertible to service as a shovel, dragline, clamshell, and crane. All motions are electrically controlled. Various motor speeds and direction of rotation are governed by the Ward-Leonard system of variable generator voltage control. Features of this machine include heat-treated machine-cut gears; shafts of alloy steel; stiffleg gantry; and welded construction, with deep sections, of the upper and lower frame. It carries a 3½ to 4-cubic-yard dipper as standard equipment.

To secure these bulletins, write to Marion and specify the machine in which you are interested—the 151M, 4161, or 111-M. Or use the Request Card at page 16, and circle numbers 72, 124, or 125 respectively.

Rotary Masonry Drills

Literature describing a line of rotary masonry drills for boring holes in concrete, tile, brick, and other masonry-like material is available from the Concrete Termite Drill Co., 2082 Foothill Blvd., Pasadena 8, Calif. The drills are made in three styles known as Concrete Termites, Tip-Top Termites (formerly called Brick Termites), and Core Termites. The circulars point out that the Termites' all-worm feature withdraws pulverized cuttings and dust immediately after the drill starts to operate, to eliminate over-heating and excess wear. Termites can be used in any electric drill or air motor that has a ½-inch chuck.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 93.

HERE'S A FASTER, EASIER, CHEAPER WAY TO HANDLE MORE DIRT, ROCK OR GRAVEL!

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The OMAHA STANDARD "CENTER DUMP" Trailer . . .

. . . *Custom Built* to Job Requirements is designed for contractors who want to haul dirt, gravel, rock, long or short distances, *quickly* and at *low cost*, for stock piling, spreading or dumping. Contractors say it is just what they have been looking for!

★ Each unit built to job requirements.
★ Available in sizes and lengths to meet all bridge, axle laws.
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Heavy-duty Buckets (13 Models). Cap. from ¾ to 8 cu. yds.
Collection Hoppers (10 Models) with variety of discharges.
Light-weight Buckets (4 Models). Cap. from ½ to 1 cu. yd.
Transition Chutes of various types.

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Concrete Floor Hoppers (20 Models). Cap. from ½ to 10 cu. yds.
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Two-wheel Barrows (6 Models) of all styles.
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Special Concrete Handling Equipment built to your specifications.

GAR-BRO MANUFACTURING COMPANY

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DEALERS EVERYWHERE

Two steel workers for The Builders Structural Steel Co. tighten sag rods in position for the framework of the State Theater at Cuyahoga Falls, Ohio. J. & L. Junior Beams were used as roof purlins.

Theater Framework Is Erected in Two Weeks

In two weeks after receiving instructions to proceed, The Builders Structural Steel Co. fabricated and completely erected steel framework for the auditorium of a modern theater building. The theater is being built for the Cuyahoga Falls Amusement Co., of Cuyahoga Falls, Ohio, and has a seating capacity of 1,500. It was designed by George Ebeling, Cleveland architect.

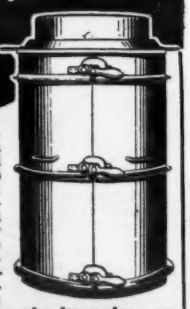
Jones & Laughlin Junior Beams with a 25-foot span and 12-inch depth were used as roof purlins. On the 3-inch-wide top flange of the purlins, 2 x 2-inch wooden nailers were attached. They were held in position by ⅜-inch bolts through holes punched in the flange.

The purlins were welded to the main trusses, and stiffened laterally by sag rods. Over the nailers, wooden roof sheeting was nailed and an asbestos-base roof finish was applied. The entire roof had been completed within a month after word was received for the job to begin.

Anderson Directs Pump Sales

Don Anderson has been promoted to Sales Manager of the Pump Department of The Jaeger Machine Co., Columbus, Ohio. He has been with the department for 15 years and was in charge of pump testing before he entered the sales division in 1940. A. C. Saxe, Manager of the department, continues to direct all engineering and development work on Jaeger's self-priming centrifugal dewatering and pressure pumps.

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

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QUINN CONCRETE PIPE MACHINES

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Sinker Drill Features Four-in-One Backhead

The CP-59, a 55-pound-class sinker drill, is recommended by Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y., for drilling holes up to 25 feet in depth. High drilling speed, rotation power, and hole-cleaning ability are features claimed for it.

With the new 4-in-1 backhead on the CP-59, changeovers to either plain dry, blower dry, wet, or air-water operation are made simply by removing a plug and changing water or air-valve assemblies. This eliminates the necessity of buying individual backheads for each operation. A newly designed valve, a new lubrication system, a replaceable bronze chuck-nut and cylinder-bushing liner are other features designed to increase the drill's performance and durability.

Further information may be secured by requesting Bulletin SP-3009 from the company. Or use the Request Card at page 16. Circle No. 75.

The CP-59 sinker drill features a 4-in-1 backhead, permitting change-overs to plain dry, blower dry, wet, or air-water operation.

Announcing...

The Amsco® Rever-SharP

The first important reversible dipper tooth improvement made in years!

it's new . . . A reversible, self-sharpening and self-hardening tooth.

it's economical . . . Improves digging efficiency. Lasts longer—with higher resistance to breakage. Tips made of Chromanal; Shanks and Adaptors of Manganese Steel.

FEATURES OF THE AMSCO REVER-SHARP THAT LOWER HANDLING COSTS PER TON

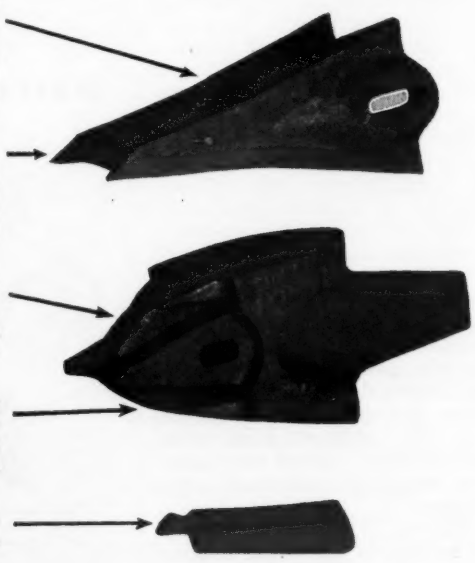
Reversible Tip—Simply turn the tip over when worn. A new, sharp cutting edge is ready for use. Made of Chromanal, the metal that actually work-hardens in service. *The harder you use the Rever-SharP, the harder it gets!*

Unique Cutting Edges—Increase service life and cutting efficiency from 50 to 200%. Reinforced and extended corners take initial impact and work-harden faster; wear is equalized along entire cutting edge.

Special Adaptor—Made of AMSCO Manganese Steel and designed so that extra metal protects base connections and lip from wear. Available to fit all base connections.

Reinforced Nose—Supported along entire length by extended ribs. Protects against bending or breakage. Tip is self-tightening as it is forced against the tapered nose during use.

Trigger Lock-Key—Tapered for easy insertion and removal. Rubber insert prevents loosening in service.



REVER-SHARP ALREADY IN USE—AND SERVICE-PROVED

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Large Pumps Solve Job Water Problem

Dewatering Problem at Site of Sewage Plant Puzzles Builder Until Propeller-Type Pumps Cure the Trouble

By RAYMOND P. DAY,
Western Editor

(*Photo on page 1*)

C. & E. M. Photos

The Wisconsin-driven CMC 4-inch pump above performs initial dewatering at the site of the Reno sewage disposal plant. At right, a Model 25 Northwest Pullshovel with a McCaffrey bucket loads an Autocar truck.

✦ BY using 4 propeller-type pumps, and some unusual metal sumps, a Reno contractor successfully dewatered what is reported to be the deepest excavation to be made in the Nevada city in the last two decades. The big pumps, with a combined rated capacity of 15,000 gpm, were used to lower the water table at Reno's new sewage disposal plant, east of the city.

When the City of Reno called for bids on the new $482,237 modernization and enlarging job, contractors who looked at the site were especially fearful of the bad ground-water condition. The area is situated in an ancient lake bottom, and the native alluvial deposit is loaded with ground water from the near-by Truckee River. After much study and research—some of it in the Reno library—G. E. Schilling Engineering & Construction Co. put in the successful low bid of $482,237.

The contract calls for construction of two modern reinforced-concrete clarifiers 180 feet in diameter, with 12-inch walls; two reinforced-concrete biofilters 170 feet in diameter with 8-inch walls; and various renovations to the existing plant, consisting principally of the replacement of mechanical facilities originally installed 20 years ago.

The present sewage disposal plant was constructed in 1929, when Reno was young. Since that time the city has doubled in population, and the old plant—consisting of two clarifiers and a small digester—was totally inadequate. The new improvements made by Schilling will permit the plant to handle 20 mgd. Provisions have been made for the addition of a large digester and sludge drying beds, but that is still in the future.

Water Is Biggest Headache

The natural ground-water condition was in evidence only a few weeks after construction began on June 1, 1949. Anticipating the water problem and all its ramifications, the Schilling management had priced several dewatering schemes which it had considered for use. The method finally accepted consisted of heavy-duty pumps, in preference to other methods. Schilling expected to recover more than half his investment after he had used the equipment 6 months.

Four Fairbanks-Morse propeller-type pumps, each driven by 40-hp U. S. electric motors, were selected. These pumps operated in metal sumps. The suction intakes were a minimum distance of 4 feet below the lowest point in the work: the sludge sumps of the clarifier tanks. This put the suction intakes about 28 feet below the natural ground surface.

The metal sumps for each pump represented a somewhat unusual application of steel tunnel liner forms, manufactured in Youngstown, Ohio, by Commercial Shearing & Stamping Co. The small sections of steel were shipped to Reno, where they were then fabricated to make sump liners 6 feet in diameter.

(*Continued on next page*)

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These Ottawa Loaders and their attachments have enabled State highway departments and other light industrial tractor owners to cut light tractor operation costs over ½. Keep your tractors working all year 'round. Here are some of the jobs the Ottawa Hydraulic Front End Loader will make it possible for your light tractors to do when they would normally be idle.

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"The Ottawa" INDUSTRIAL HYDRAULIC FRONT END LOADER

Ottawa STEEL PRODUCTS, Inc.
INDUSTRIAL DIVISION
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C. & E. M. Photos

The workmen at left assemble perforated Commercial Shearing & Stamping Co. steel sections to make a sump for the deep-well pumps used to dewater the site of the Reno sewage plant. Above, concrete forms made in the contractor's yard lie stacked in heaps, ready for the hour when excavation will be complete.

Large Pumps Solve Job Water Problem

(*Continued from preceding page*)

Prior to assembling the steel forms, part of the shipment was heavily perforated with ⅞-inch holes. This work was done in the Reno shop of Martin Iron Works, which incidentally has a subcontract for all the steel on the project. Enough of the sections were perforated to make 12 feet of well sump at the bottom of each hole.

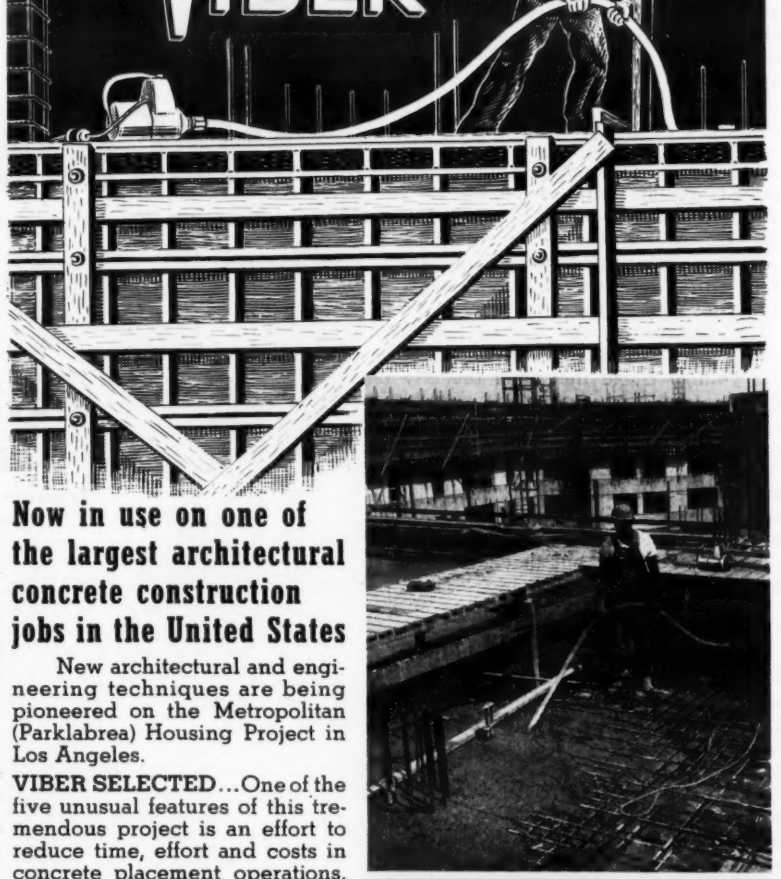
Five standard steel washers were placed between each row of metal plates, where bolts joined them together. This was done both on the punched and unpunched sections to increase the percolative factor. Each 28-foot sump was made up with one 12-foot-long bottom section, perforated, followed by two 8-foot unperforated pieces for the top part of the hole.

The sumps were installed by first roughing out a location with the backhoe used in excavation. Then a small Northwest crane, with a ½-yard clamshell bucket, set the 12-foot perforated section. It was sunk by clamming out material from the inside. This process was repeated after the top sections had been joined to the perforated section, until the bottom of the sumps was down 28 feet below the ground surface.

In the first-stage dewatering scheme, the sumps were placed just outside the east, west, north, and south extremities of the west clarifier. In that position the pumps would dewater the area sufficiently to excavate and construct the clarifier and part of the biofilters in that area. Then the sumps were moved to encircle the eastern clarifier in the same way. The one sump on the east side of the western clarifier remained in position, becoming the west sump for the second, or eastern, clarifier.

The discharge from the four pumps was expected to be approximately 1,000,000 gallons for each hour the big machines worked. It was expected that three of the pumps would lower the water table sufficiently, leaving one for a stand-by. While the Fairbanks-Morse pumps had not officially begun work when this magazine visited the project, preliminary tests made with a 4-inch CMC centrifugal pump resulted

(*Continued on next page*)



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New architectural and engineering techniques are being pioneered on the Metropolitan (Parklabrea) Housing Project in Los Angeles.

VIBER SELECTED...One of the five unusual features of this tremendous project is an effort to reduce time, effort and costs in concrete placement operations.

The exclusive use of Viber equipment on a project that is testing new construction methods and techniques illustrates the regard engineers and construction men have for this interchangeable line of concrete vibrators.

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in a general lowering of the water table over 200 feet away from the pump sump. The contractor, therefore, knew his scheme would be successful.

The pumps discharged through the clarifier scrubber on the sewage disposal plant, with some of the water going direct to the near-by Truckee River. An irrigation ditch, situated along the river bank near the clarifiers, also received some of the water in order to maintain its level. Maintenance of the irrigation canal was one of the contract requirements.

"Any way you want to look at it, it's a water problem," explained Superintendent W. R. Franklin and Contractor G. E. Schilling as they hurriedly directed the mobilization of sumps and pumping equipment. Schilling decided on the extra-duty high-capacity pumping scheme after having had "not one dry job in five years" in the Reno vicinity. Much of his activity has been in connection with large sewers, on which ground water always presented a problem.

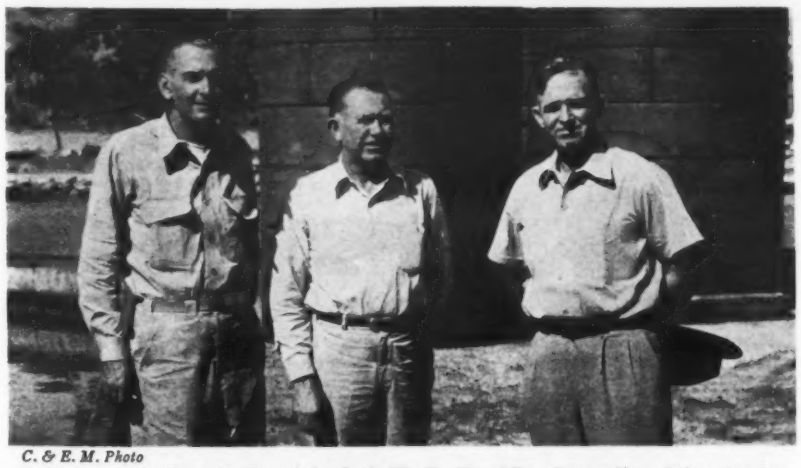
Excavation Gets Started

The excavation of 50,000 cubic yards of alluvial till and boulders within the work area had been subcontracted to Earl E. Games of Reno. Games moved in at once and, when the project was visited, had successfully stripped off a 5 or 6-foot lift to expose the natural water table beneath. In that operation some large boulders were uncovered, which were expected to become more numerous as the hole got deeper.

Contract plans called for the disposal of all excess material within the sewage disposal area reservation. Much of the material was stockpiled for use as backfill later on, after the concrete structures were finished. In all cases the haul was short: less than 600 feet one way.

Games used a Caterpillar D7 tractor with a 10-cubic-yard LeTourneau Carryall to remove all the top excavation, and to get whatever it could farther down. The main bulk of excavation involving boulders and heavy material was handled by a Northwest Model 25 Pullshovel, rigged with a special oversize ⅞-cubic-yard McCaffrey bucket. It is somewhat wider and shorter than is conventional in scoops of that type, which resulted in better loads with a shorter pull.

"When I installed that bucket, I found that I could put one or two more trucks under the machine," explained Games.



C. & E. M. Photo
Left to right, General Superintendent W. R. Franklin, Excavation Subcontractor Earl E. Games, and Resident Engineer Ben Sheahan.

Hauling equipment under the Northwest Pullshovel consisted of 3 trucks: two 10-yard Autocars and a 6-yard International. There was also an Allis-Chalmers HD-5-mounted Tracto-Shovel, which was used for miscellaneous minor loading.

The Pullshovel was operated from the top of the work area. It covered the entire site, reaching down as far as possible, excavating and maintaining a good grade for the next lift. The trucks were also loaded on top of the bank, and thus as the pumps dewatered the area, the excavating equipment was able to operate at all times in dry footing.

The average 8-hour output by this fleet of excavating equipment was 1,500 cubic yards. Work was done 6 days per week. The big boulders which were found occasionally presented no special problem, because the wide, short backhoe dipper could handle them easily.

Form Work and Concrete

Because of the similarity of design in the structures, concrete forms could be used over and over. The clarifier forms could even be used in the biofilters, with minor reworking. For this reason the forms were prefabricated in a carpenter yard at the site and were made of high-grade lumber. Plywood

(Concluded on next page)

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MODEL TMH CONVERTED

Where specifications show a necessity of over 90% compaction on backfill tamping, R.P.B. equipment has the power and reach to do the job rapidly and permanently.

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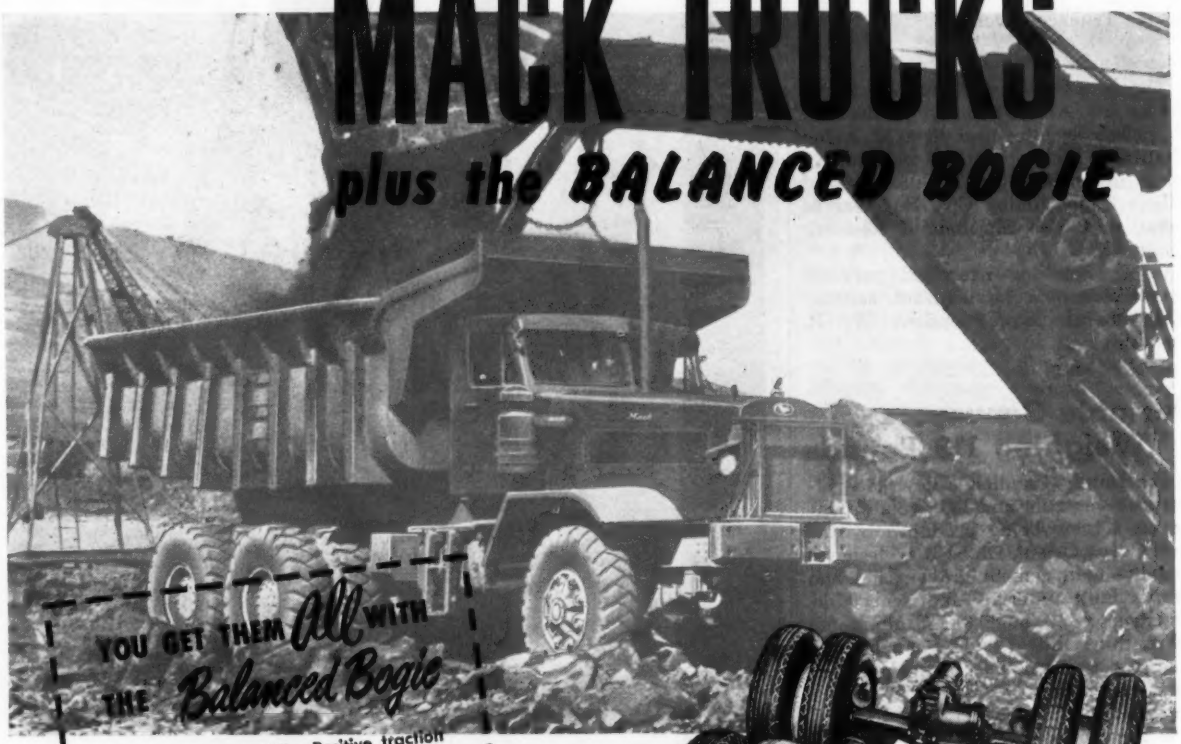

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Large Pumps Solve Job Water Problem

(*Continued from preceding page*)

facing was used, with studs and wales on close centers to stand the repeated use the forms got.

Carpenter work in connection with concrete forms was subbed to Wine Construction Co. of Reno. A crew of carpenters began work right away, in an effort to have the first clarifier forms ready to set in place the minute the footing grade was reached.

While concrete placement was still some time in the future when this job was visited, it too had been all arranged. Ready Mix Concrete Co. of Reno supplied the mixed material in truck-mixers. John Newman had subcontracted the placing. The concrete was handled direct to the forms by short chutes. No elaborate transfer process was considered necessary. The concrete was vibrated with small electric machines, and all inside surfaces were cured by Hunt Process. The concrete surfaces below ground were coated with a heavy asphaltic preparation.

Completion of the new addition by March, 1950, will be a long step toward full-scale modernization of Reno's sewage disposal plant, and it will reduce the present degree of stream pollution on the Truckee River.

Personnel

The project was designed by Harry Jenks and Alden Hunting of the San Francisco architectural firm of Alden Hunting. Field operations were supervised under the general direction of Elliott Cann, Acting City Engineer of Reno, with Ben Sheahan as Resident Engineer.

G. E. Schilling exercised personal supervision over his contract, assisted by General Superintendent W. R. Franklin.

Portable Conveyors Weighing 119 Pounds

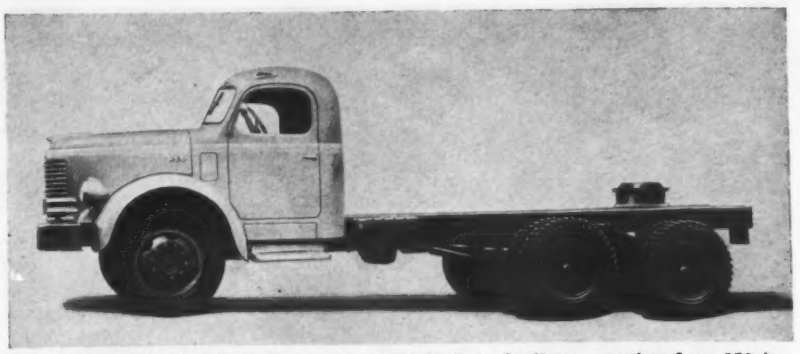
The Handy-Handler, a new general-purpose versatile and lightweight conveyor, is now being produced by the Belt Corp., Orient, Ohio. It is designed to deliver salt, cement, gravel, sand, and similar bulk materials, and is portable. Constructed of tough 61ST6 aluminum alloy, the Handy-Handler can be carried and positioned by one man. The lightest of several available models weighs 119 pounds when equipped with a 2-hp gasoline engine. It can be carried from one point to another on the job, and put into instant use loading trucks, filling hoppers, and similar operations.

The conveyor comes in lengths from 10 to 20 feet. The standard 16-foot model may be increased to 20 feet by inserting a 4-foot midsection when additional reach is required. Models are available with choice of three electric motors and three gasoline engines. The engine mount can be removed easily and is adaptable for all power units. Buyers may select either rubber flights and a continuous rubber belt, or steel flights and chain, depending upon the application intended.

Further information on the Handy-Handler may be secured from the company. Or use the Request Card at page 16. Circle No. 111.

Tandem Truck Line

Production of a new series of tandem trucks powered by the Gold Comet gasoline engine was recently announced by Reo Motors, Inc., Lansing 20, Mich. The new trucks in the Model E-226 series are rated at 34,000 pounds, gross vehicle weight, and are available in five wheelbases ranging from 150 to 203 inches, with hydraulic or full air brakes.



Reo's new Model E-226 tandem trucks come in five wheelbases ranging from 150 to 203 inches. They are rated at 34,000 pounds gross vehicle weight.

Standard tire size is 8:25 x 20, with 9:00 x 20 tires optional.

The 6-cylinder Gold Comet engine powering the E-226 tandems has a maximum gross horsepower of 140 at its governed speed of 3,200 rpm. Maximum gross torque is 264 foot-pounds at 1,600 rpm.

Further information on these new Reo trucks may be secured from the company. Or use the Request Card at page 16. Circle No. 17.

Ditching-Equipment Catalog

Deep-sewer and water-ditching equipment is graphically portrayed in a new catalog put out by the Findlay Division of Gar Wood Industries, Inc., Dept. 022, Findlay, Ohio. It explains fully the features and applications of Buckeye Models 120 and 160 service ditchers.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 15.

LOOK UNDER THE HIDE

When buying, look under the hide to see what you're getting. Foresight is cheaper than hindsight.

INDIVIDUAL FUEL INJECTION PUMPS for each cylinder — meter the fuel, time the injection, and provide accurate injection pressure. Pumps operate at half engine speed — an important factor in their long life.

NON-CLOGGING, SINGLE-ORIFICE FUEL INJECTION VALVES give clean, efficient combustion throughout the entire operating range of the engine — low idle, part load or full load. They are non-adjustable and interchangeable.

METAL-EDGE TYPE OIL FILTERS consist of four nested parts which provide a large filtering area. The full oil flow passes through these filters continuously, allowing no chance for harmful particles to be circulated by the oil stream.

ABSORBENT TYPE FUEL FILTERS consist of a filter paper covered core wound with cotton yarn in a closely controlled pattern so that the entire depth catches and holds even the finest abrasive particles. The low-cost filter elements safeguard the fuel injection parts.

CONVENIENT FUEL PRIMING PUMPS and air bleed valves enable the fuel system to be bled with very little effort. A glass window makes it easy to tell when all air has been removed.

AIR STARTING consists of a vane type air motor which cranks the Diesel through a Bendix type drive engaging the flywheel ring gear. The motor, air pressure regulator, oiler, and control valve may be mounted on either side of the engine.

ELECTRIC STARTING consists of two 32-volt motors mounted on each side of the engine. As in the case of air starting, the Diesel is cranked through a Bendix type drive.

Hydraulic Coupler For All Purposes

A new all-purpose hydraulic coupler has been developed by the Ulrich Mfg. Co., Roanoke, Ill. It is applicable to hook-ups where a breakaway type of coupler is required as well as to those where a standard type is indicated.

When the plug is inserted into the socket, a slight twist causes a sleeve to lock the coupler automatically. Pulling the sleeve back disconnects the coupler. This is the standard application. To use as a breakaway coupler, the sleeve is connected to the tractor by means of a bracket. If the equipment piece breaks loose from the tractor, the bracket pulls back the sleeve and disengages the coupler automatically, preventing hose breakage and oil loss. The manufacturer stresses the simplicity of the breakaway arrangement—no chains, collars, or special links are used.

The new Ulrich coupler serves as a breakaway or standard type.

The new all-purpose coupler can be connected under all operating pressures, the company states. When disconnected from a raised load, it is said to hold the pressure of the load as long as required.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 20.

Lubricating Equipment

A new lubricating-equipment catalog for contractors has been announced by the Lincoln Engineering Co., 5702-74 Natural Bridge Ave., St. Louis 20, Mo. Catalog No. 30 shows how to keep construction machinery properly serviced at all times by providing on-the-job power lubrication. The folder illustrates and describes lubrication departments that are compact, modern, mobile, and designed to meet any requirement.

You may have a copy of Catalog No. 30 by writing to the company, or by using the Request Card at page 16. Circle No. 6.

The Meili-Blumberg Super 4 self-propelled safety-line marker stripes a double center line. Note that the operator rides on a trailer hitched to the marker.

New Line of Markers For Traffic Striping

A new line of street, highway, and industrial marking units has recently been introduced by the Meili-Blumberg Corp., New Holstein, Wis. It includes the Super 10 self-contained self-propelled highway marker, powered by a Wisconsin Model TF engine, for striping all types of traffic lines; the Super 4 self-propelled safety-line street marker; and the No. 5 safety-line marker, electric or gas-driven, for street or industrial plant striping, or spray painting. All street and highway models are available with a bead dispenser attachment, if desired.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 99.

Central Mixing Plant

A newly formed company, Supremix Inc., 401 Grace St., Adrian, Mich., an affiliate of the Gene Olsen Corp., offers a complete line of equipment and engineering service for ready-mix concrete plants. Under the direction of President Eugene F. Olsen, Sales Manager Melvin L. Myers, and the consulting engineering firm of Glenway Maxon, the new company supplies plant, mixing, and hauling equipment—ranging from a single screw conveyor to a central-mixing package plant.

Correlated units such as bins, batching gates, weigh hoppers, batch accumulator scales, bulk-cement equipment, etc. are provided by the firm. The Supremix tilting mixer comes complete with a supporting frame structure; an improved blade arrangement combined with the new tilting feature is designed to speed thorough mixing and discharge of unsegregated concrete. The Plastograph, an integral part of the Supremix mixer, continually measures the consistency of the concrete in the mixer. This consistency, or slump, is visually recorded by light signals which permit the operator, even though remotely situated, to discharge the load at the specified slump. The centrally mixed air-entrained concrete can be delivered in the Supremix concrete Dumper (formerly known as the Hercules Aircreter).

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 138.

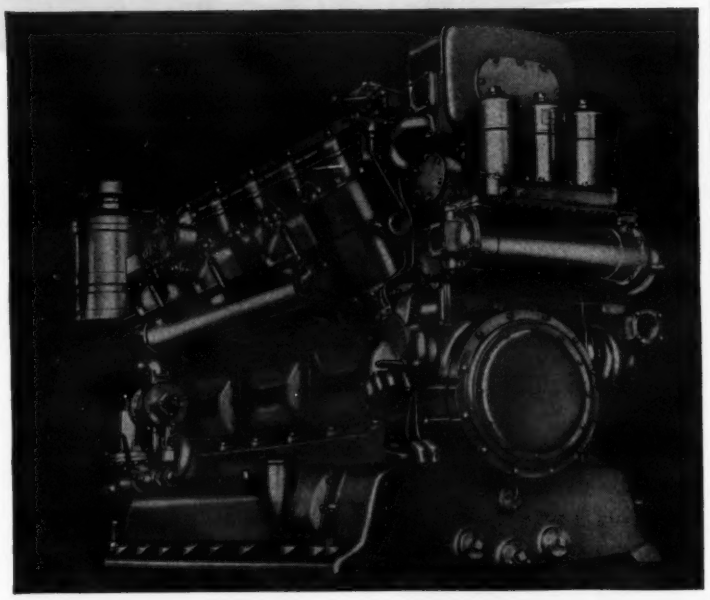
Allied Steel Appointments

Several new appointments have been announced by Allied Steel Products, Inc., Cleveland manufacturer of special steels for the maintenance of construction equipment.

L. R. Edminster has been advanced to Division Sales Manager on the Pacific coast, and Wade V. Kern to the same position in the territory east of the Mississippi River.

Frank L. Shoemaker represents the company in Washington and Oregon, William Barron in northern California, Don Page in Ohio and Michigan, and George D. Heath Co. of Kansas City, Mo., in Nebraska, Kansas, Iowa, Missouri, and the southern half of Illinois.

NEED Big Muscles



LOADING, lifting and swinging a full 7-yard load from the end of a 120-foot boom is no "pantie-waist" exhibition. For handling such big bites, the Ruby Construction Company, Inc., repowered their giant Bucyrus-Monighan dragline with the big new 400-horsepower "Caterpillar" D386 Engine. Because of the power and lugging ability of the "Cat" Diesel, bucket size was increased from the original 5-yard capacity. With its more "muscular" "Cat" Diesel, the outfit has moved more earth at a faster rate than it has ever done before.

The D386 and the still more powerful D397 (500 hp.) have extended the line of "Caterpillar" Diesels to meet a much wider range of power requirements. Built in "Caterpillar's" huge new engine factory, "Caterpillar" Diesels offer you many exclusive, profit-making features. By specifying "Cat" Diesels on your equipment orders, you are assured maximum economy, utmost dependability, and lowest maintenance costs.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

SPECIFY "CATERPILLAR" DIESEL POWER IN THE NEW EQUIPMENT YOU BUY—AND FOR REPLACEMENT IN THE EQUIPMENT YOU ALREADY HAVE.

CONSIDER the quick and efficient parts-and-repair service that is available to you (no matter where your headquarters or jobs are located).

USE THE COUPON for specifications and other information on "Cat" Diesels. No obligation.

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL

ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO., Box CE-3, Peoria, Ill.

Send specification sheets on "Caterpillar" Diesel Engine models and sizes.

Name _____

Address _____

This is one style of Never-Slip vertical clamp for handling steel plate.

Jaw Gripping Clamp For Handling Steel

A complete line of clamps, both horizontal and vertical styles, for handling steel plate is manufactured by Never-Slip Safety Clamp Division of Kensico Mfg. Co., Mt. Kisco, N. Y. The clamps are available in a complete range of sizes to handle plate from ⅛ inch to 6 inches thick, weighing up to 12 tons. That part subject to wear, the jaw bearing surface, is a replaceable grooved, hardened tool steel plate. There are no concealed parts. Illustrated is one style of vertical clamp.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 63.

Tube Hammer Reaches Inaccessible Places

A new type of hammer for use where nails are hard to reach is now available from the Tube Hammer Mfg. Co., 1308 E. Colorado St., Pasadena 1, Calif. Made in three convenient sizes—12-inch, 18-inch, and 24-inch—this tool is designed to drive any nail from a 6-penny finishing nail to a 20-penny box nail.

It is easy to use, the company says. The nail is inserted into the end of the hammer tube; the magnetized tip of the hammer holds it in place. The weighted handle drives the nail, which is guided and held in place by the tube. A removable guide shoe is used when nailing close to finish work. A special adapter, which is self-setting (does not require the use of a nail setter), is available for driving small finishing nails.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 100.

Hand, Face Protection

The plastic, utility face shields and the leather and cloth work gloves offered by Safety Clothing & Equipment Co., 7016 Euclid Ave., Cleveland 3, Ohio, are designed to protect the faces and hands of workers in hazardous jobs.

The Gardwell No. 1 face shield has a 16⅝ x 8½-inch visor which covers below the chin and behind the ears. The positive-locking ratchet knob at the back secures the shield to any adjusted size. The tension swivel joint at the side holds the visor in any position within a 90-degree arc. A fiber shield provides frontal head protection. The shade is available with clear or green visors 0.02, 0.04, and 0.06 inch in thickness, or if desired, with a wire-mesh screen visor.

Gardwell leather gloves and mittens are made in a variety of types. The one-piece backs have no seams to wear or burn out. The finger seams are sewn inside to prevent burning out when used in welding work. Canvas gloves, reinforced with leather, are also available for heavy-duty work.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 14.

Air-Compressor Catalog

A new catalog on Joy Unitair compressors is now available from the Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa. Subtitled "The Compressor of a Thousand Uses", this 16-page catalog is illustrated with pictures of all sizes of the Joy WL-80 compressor, as well as sectionalized drawings to point out its features. A "Selector Chart" in the bulletin enables a choice of compressor according to job requirements.

The Unitair has application as a power source in the construction, quarry, and public utilities industries. Suitable for truck mounting with a power take-off, it is available in eleven sizes, 15 to 125 hp, with piston displacements from 81 to 640 cfm at 125-pound maximum pressure. These two-stage air-cooled compressors are furnished as complete units with gasoline or diesel engine, or electric motor drive.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 69.

CUT YOUR COSTS

with AMERICAN GRADERS!

CHECK THESE FEATURES

- **Small Initial Cost**
- **Low Operating Costs**
- **Small Maintenance Costs**
- **A Complete Maintenance Grader (Fully Hydraulic)**
- **Highly Versatile—It Scarifies, Bulldozes, Plows Snow, Loads All Loose Materials**

Available in 4 Models—Write for Full Details

The American-Coleman Company
OMAHA, NEBRASKA

This 145-horsepower Series F-7 Ford Truck has a Gross Vehicle Weight rating of 19,000 lbs.

"We've cut sand hauling costs 30% with our Series F-7 Ford Truck" —SAYS F. M. LeGATE, Jr.

JACKSONVILLE SAND CO.
JACKSONVILLE, FLORIDA

"We were faced with mounting hauling costs because of increasing length of haul and greater traffic congestion," reports F. M. LeGate, Jr. of the Jacksonville Sand Company. "Then we changed to a series F-7 Ford Truck.

"This new 145-horsepower Ford has done the job. Hauling six yards of sand instead of the four yards hauled by our older model trucks, it has cut our cost per yard by 30%."

In any line of business, *Ford Trucks do more per dollar!* They go easy on expense for gas, oil and repairs. They're strong on work output. Ford Trucks are built with big reserves of strength and power to handle big loads at low cost.

Let your Ford Dealer show you which one of over 175 models is the one right truck for your job.

HERE'S WHY AMERICA'S NO. 1 TRUCK VALUE WILL DO MORE PER DOLLAR FOR YOU!

- **SAVE GAS with Ford Loadomatic Ignition and High Turbulence combustion chambers.**
- **SAVE OIL with Ford Flightlight aluminum alloy pistons.**
- **SAVE WEAR with pressure lubricated main and crankpin bearings, Double Channel frame, extra heavy duty axles, big brakes (up to 16-in. x 5-in.).**
- **SAVE ON REPAIRS with demountable brake drums, brake inspection hole, engine-top setting of accessories, plus nationwide service from over 6,400 Ford Dealers.**
- **SAVE TIME with Ford reliability and performance. Up to 145 horsepower. Only Ford gives you a choice of V-8 or Six!**

Ford Trucks Cost Less Because –

FORD TRUCKS LAST LONGER

Using latest registration data on 6,106,000 trucks, life insurance experts prove Ford Trucks last longer!

Vermont Maintenance Is Year-Round Job

Highways Are Kept in Shape Summer and Winter Through The Continuous Activity of 12 District Commissioners

✦ THERE is no slack season for highway maintenance in the state of Vermont. The never-ending job of repairing the roads extends approximately from the middle of April to the middle of November. For the remaining five months of the year, winter maintenance is usually in order; that is, plowing the snow from the highways and controlling the ice on the pavements. These continuous operations over the Vermont highway system are handled by 12 District Highway Commissioners who report directly to the Chief Engineer of the Department of Highways.

The latest count in the Green Mountain State shows that it is served by some 14,091 miles of roads. This mileage falls into three categories:

State highways	1,804 miles
State-aid secondary highways	2,749 miles
Town highways	9,538 miles
Total	14,091 miles

The state is divided into 12 highway districts which cut across county lines since there are 14 counties in Vermont. The District Highway Commissioner in each district not only maintains the roads within his boundaries, but also supervises construction projects on state-aid secondary and town highways. These projects are built with funds appropriated by the State Legislature. The jobs to be done are chosen by the three Selectmen in each town and the District Highway Commissioner of that particular district. Projects that are considered worthwhile are then launched as permanent new construction improvements. The towns do the actual work and are later reimbursed by the state for the cost of same.

Projects include such features as grading, widening, drainage and culvert installations, laying gravel base, spreading surface gravel, and tar surface treatments. On the last item, for instance, the state last year set aside $300,000 for work in the 12 districts, or $25,000 per district. The tar is purchased through low bids received in Montpelier, the state capital, and allocated to the districts according to their needs. The company awarded the contract also furnishes a distributor for applying the bitumen, while the rest of the necessary equipment and manpower is supplied by the state.

Winter Highway Maintenance

Of the 1,804 miles of state highways in Vermont, all but 7 miles are maintained throughout the winter. The short section not looked after is not traveled in the winter months. During the 1947-48 winter, the latest period on which statistics are available, winter maintenance cost $1,075,255.29. This figure is approximately 40 per cent of the total maintenance bill for the state system. The cost per mile of the work was divided into the following classifications:

Plowing snow	$165
Applying sand and chemicals	295
Snow fence	20
Miscellaneous other items	116
Total	$596

This $596 per mile cost is the peak of a steady rise over the past 16 years. In 1932 the cost per mile of winter highway maintenance was only $72.

Besides its maintenance on state highways through the winter, the state also contributes financial assistance to towns and municipalities for plowing on state-aid and town highways. During the 1947-48 winter, the towns maintained 2,649 miles of the 2,749 miles of state-aid secondary highways. For this they received from the state half the cost up to $50 per mile, or a total of $126,837.05.

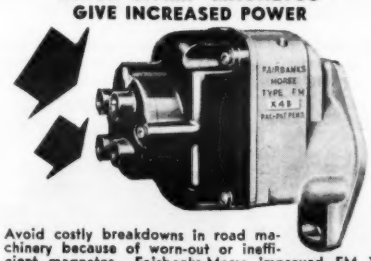
On the town highway system the state appropriates $250,000 a year for winter maintenance. From this fund the towns receive the total cost of actual work up to $25 per mile. For the 1947-48 winter period, 7,435 miles out of 9,538 town highway miles were kept open at a cost of $186,335.31 to the state.

(*Continued on next page*)

C. & E. M. Photo

District 2 headquarters at Brattleboro, Vt., are located just north of town on U.S. 5. Offices are upstairs over the white-painted frame garage.

Improved **FAIRBANKS-MORSE 'SUPER SPARK' MAGNETOS GIVE INCREASED POWER**



Avoid costly breakdowns in road machinery because of worn-out or inefficient magnetos. Fairbanks-Morse improved FM X type 'Super Spark' magnetos give smooth, full-powered operation with improved breaker mechanism, larger bearings, improved magnetic rotor and timing facilities.

Available for 1, 2, 4 and 6-cylinder small, medium and heavy duty engines, the FM-X supersedes the former popular FM-J type magneto.

See our nearest service station or write for details.

FAIRBANKS, MORSE & CO.
Magneto Division Beloit, Wis.

NOW

A Tractor-Mounted All-Hydraulic Backhoe!

Here's a great new profit-making tool for contractors, cities, public utilities and towns. The New Oliver-Ware Hydro-Trencher is an all-hydraulic backhoe mounted on Oliver Industrial "77" or "88" Tractors. It's a smooth-acting, simply operated unit that will do a job comparable to much higher priced conventional backhoes . . . outperform many!

Note these profit-making features:

SIMPLE OPERATION. Smooth, finger-tip control hydraulic operation eliminates operator fatigue. Any man can operate this machine immediately . . . specially trained operators are not required.

SAFETY. No cables to break . . . no slipping brakes. Safety feature in hydraulic system reduces wear and tear on engine. Engine speed seldom has to go beyond idling.

COMPACTNESS. Unit can work in areas where truck and crawler mounted units cannot work.

MOBILITY. Tractor-mounted unit moves easily and quickly from job to job under its own power and is ready to dig on arrival.

STABILITY. Individually controlled hydraulic outriggers allow operation from a level position . . . hold tractor in place.

VERSATILITY. Digs in any kind of ground . . . over 10 feet deep at speeds comparable to any conventional backhoe. Hydraulic controls give boom down pressure for fast digging . . . a full bucket every time.

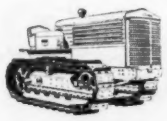
A Swing Loader Bucket Attachment is available for use with the Oliver-Ware Hydro-Trencher and can be installed in a few minutes.

For the complete story on this new, profit-making unit, mail the coupon.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors



THE OLIVER CORPORATION,
Industrial Division
19300 Euclid Ave., Cleveland 17, Ohio
Gentlemen:
Send me the facts on the new Oliver-Ware Hydro-Trencher.

Name.....
Company.....
Address.....
City.....*State*.....

Vermont Maintenance Is Year-Round Job

(*Continued from preceding page*)

Highway District No. 2

For more details on highway maintenance in Vermont, let us visit Highway District 2 in the southeastern corner of the state, where Rod Maynes is District Highway Commissioner with headquarters at Brattleboro. The latter city (population 9,622) lies on the west bank of the Connecticut River, which runs along the entire eastern boundary of Vermont, separating it from New Hampshire. District 2 comprises nearly all of Windham County and includes 19 towns, or townships as they are more properly called. It contains 1,015 miles of highways which are classified as follows:

State highways	93 miles
State-aid secondary highways	219 miles
Town highways	703 miles
Total	1,015 miles

Town highways are either gravel, or else dirt roads that have been graded and drained. The state-aid secondary class are all gravel, of which about 25 per cent have been surface-treated. The state highways are divided into the following groups:

Concrete	15 miles
Macadam, mixed-in-place	8 miles
Macadam, penetration	8 miles
Bituminous mix	21 miles
Surface-treated gravel	24 miles
Gravel	17 miles
Total	93 miles

The most important artery of travel in the district is U.S. 5, Calvin Coolidge Memorial Highway, running north and south along the scenic Connecticut River. In Brattleboro it meets State Route 9, the Molly Stark Trail, a well used east-west highway crossing the state from New Hampshire to New York. The largest Federal-aid secondary project going on in the district last year was a 6.8-mile gravel job near Jamaica, which was surface-treated in the fall. In addition, the bituminous work included six locations, each about a mile long, where gravel roads were surface-treated.

Diversified Maintenance

When winter maintenance comes to an end around April 15, summer maintenance gets under way. This steady routine of diversified maintenance is handled by 3-man crews, made up of a patrolman and 2 helpers with a truck and necessary equipment. Broken guardrail is repaired, with posts, anchors, and cables being replaced when necessary. Culverts are cleaned out, along with the inlet and outlet ditches connecting with them; sections of pipe and new headwalls may also have to be installed. Graders are directed to locations where ditches along the roadside need to be re-opened.

Then attention is turned to patching pavements broken up during the winter. Stockpiles of patching material are spotted around the district for the convenience of the patrolmen. The material consists of bank or crusher-run gravel which is mixed with either tar or asphalt in a small Barber-Greene pugmill plant. The piles of patching material are covered with sand and sprayed with asphalt to provide a protecting seal until they are needed on the road. The holes in the pavement are filled by hand, tamped by hand, and then rolled with the wheels of the patrolman's truck.

Shoulders are shaped with a pull grader towed by the truck. This is done out to the top of slope or as far as the guardrail. Brush is cut down, the roadside mowed with power equipment, while around trees and guardrail posts the trimming is done by hand. Further refinements include cutting and trimming brush and trees, especially on the inside of curves to improve sight distances. The state acquires easements along the right-of-way to further such safety measures. The burning of brush is handled in an efficient manner with the use of an old cylindrical boiler split lengthwise down the middle and half of it mounted on wheels. The brush is fired in half of this metal shell towed along by a truck; thus the crew does not have to go back continually to make sure fires are under control.

Flood Damage

State Route 30, northwest out of Brattleboro, follows along West River as it flows through Windham County. Last winter the river topped its banks during a flood and washed out sections of highway to the extent of $180,000 worth of damages. In the summer of 1949, maintenance crews were repairing the roads by filling in the holes with gravel, and placing riprap along the slopes of the road where it parallels the river. An old abandoned granite quarry supplied excellent material for this purpose in 1 and 2-ton stone riprap.

Major improvement work last year in the district also included 30 miles of re-treatment on both state and state-aid routes. This seal work consisted of an application of RC-5 asphalt covered with peastone. Aggregate was purchased either in Bartonsville in the northern part of the district, in Brattleboro, or in northern Massachusetts.

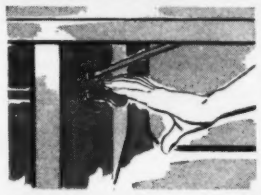
District Headquarters

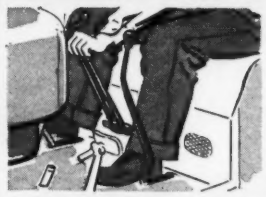
District 2 headquarters at Brattleboro are located just north of town on U. S. 5. Repairs are done in a white-painted frame garage with district offices upstairs on the second floor. Major jobs may be sent to the central garage in Montpelier, although there is a full-time mechanic in the district to handle most of the large jobs. In the rear of the main building is a metal shed for equipment storage, and a wooden shed for storing supplies such as salt, calcium chloride, cement, steel, etc. The highway also has an auxiliary storage shed in Bellows Falls in the northern part of the district. All equipment is stored in Brattleboro, however, with the exception of one motor grader which is kept in the northwest corner of the district. This grader is outfitted with a snow plow.

Equipment used in District 2 includes the following:

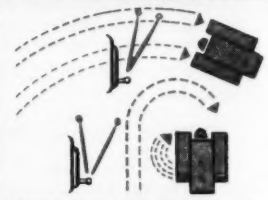
(*Concluded on next page*)

CHAMPION the NEW


Positive all-weather starting on gasoline, with quick change-over to full diesel operation, all from the seat.

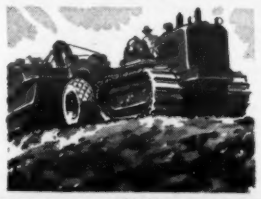

Instant speed change up or down one speed, or stop, without declutching. Planet Power drive does it!

Separate reverse lever for quick change of direction. The tractor moves in the direction the lever is moved.


Planet Power steering puts turns with power on both tracks, feathered turns and pivot turns at your fingertips.

HERE ARE SOME OF THE CHAMPION'S EXCLUSIVE FEATURES

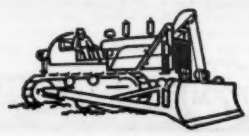
Self load and run with scrapers of 17-yard capacity—and shift gears on-the-go with the rolling load.



Cut waste shifting time out of work cycles; provide the best speed for every operation, 8 speeds in each direction!

Work on grades up to 100%. Its power, ground contact, balance and lubrication are right for licking any grade.

Handle heaviest loads on gradual turns as easily as straightaway because both tracks are powered in the turn!



1 FWD 5-yard truck with a 1-way and V-type wing plow
1 International 5-yard truck with 1-way plow
1 International 3-yard truck with 1-way plow
2 GMC 4-yard trucks with 1-way and wing plows
2 pick-up trucks
1 trailer
3 Gallon motor graders with 12-foot blades, one with a wing plow
2 Buffalo-Springfield 3-wheel rollers, 6-ton and 10-ton
1 Ingersoll-Rand air compressor
1 Nelson bucket loader
1 conveyor belt for stockpile work
1 Osgood ½-yard shovel
1 Lorain ½-yard shovel
1 Caterpillar D7 dozer
1 Farmall tractor and mower
1 Littleford power broom
1 P&H 300-amp electric welder
2 Jaeger 1-bag concrete mixers
1 Littleford tar kettle, heater, and spraybar
4 Caterpillar pull graders
1 Bailey bridge, 150 feet long
2 salt spreaders
2 steam boilers
1 Burch stone spreader
1 Buckeye stone spreader
1 derrick with 28-foot boom
1 set of batch scales
2 concrete buggies
12 sanders
1 tank for tar, 1,000-gallon
2 tanks for asphalt, 800-gallon

The District has 13 snow plows which may be mounted either on state-owned or hired trucks. They include 8 Ross one-way plows; a Wausau one-way plow; 3 Frink one-way plows; and a Frink V-plow.

During the summer, District 2 employs around 75 men; this figure drops off in the winter to around 25 to 30 men who are generally sufficient for snow plowing. More are added if necessary, but in last year's light winter the added labor was small. The five patrolmen working on the state highways with their plows looked after sections from 15 to 30 miles in extent. Each piece of equipment was always manned by two maintenance workers.

When the snow is cleared away, salt is applied to the bituminous pavements to melt the ice that remains. Because of disintegration, no salt is put on the concrete pavements. Sand is used instead, being spread from sanding units hooked to the backs of trucks. The road that requires the most attention is generally the section of State Route 9, Molly Stark Trail, that climbs up Hogback Mountain to elevation 2,200 where a skiing center is located. Annual snowfalls there average 100 inches.

The Vermont Department of Highways is headed by F. Richard Bradley, Commissioner of Highways, and Hubert E. Sargent, Chief Engineer.

U. S. Savings Bonds are security bonds. Their purchase provides for your personal security as well as the economic security of the country.

"There Is Nothing Like The TD-24. It Can Out-Push Any Tractor On The Job."

"Here is the Champion of Crawlers," owners will tell you, "the tractor that will pull down your dirt moving costs."

Contractors and operators who have observed or operated the new International TD-24 diesel crawler are spreading the news. Here is a tractor that out-works and out-performs every other crawler known to the industry!

Operators compete with each other from Florida to Alaska to get "the big red devils," the TD-24's, assigned to them. They'll tell you no other tractor can compare with the TD-24 for ease of operation or work capacity!

of Crawlers
INTERNATIONAL TD-24

Comfortable to ride, powerful, fast, safe and economical to operate, the TD-24 is revolutionizing ideas of what crawler tractors can or cannot do on the big jobs.

Regardless of what equipment you now use, visit your International Industrial Power Distributor and get a TD-24 demonstration. See for yourself what the TD-24 can mean to your operations in shortened time, reduced costs, extra profits.

INTERNATIONAL HARVESTER COMPANY • Chicago

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INDUSTRIAL POWER

Tune in "Harvest of Stars" with James Melton, Sundays, N. B. C.

An Electric Drive Powers Mortar Mixers

An electric drive for use on its de luxe and Thru-A-Door de luxe mixer models has been developed by The Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif. Addition of the electric-drive mixer to its line now permits operation in otherwise inaccessible quarters, according to the company.

The driving power for the mixers is provided by a General Electric Tri-Clad single-phase capacitor motor, rated at 3 hp, 1,720 rpm, 115/230 v, 60 cycles. Power is transmitted from the motor to the paddle shaft of the mixer through a completely enclosed transmission, running in oil. A gear-reduction unit reduces the speed so that the paddles turn at 34 rpm.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 131.

Tree-Felling Jack

A tree-felling jack has been designed especially to push trees the correct amount when they are being sawed—just enough to prevent the saw from pinching during cutting, and to give the tree a long follow-through shove just as the cut is finished. Manufactured by The Jacobs Wind Electric Co., Inc., 2111 Washington Ave., N., Minneapolis 11, Minn., the new device has two springs for pressure application. The heavier spring holds and starts the bend and the lighter one automatically kicks-in to continue the follow-through action and insure an exact fall.

Control of the spring pressure permits application of the proper push-effect for each size and type of tree. The special 4-pointed fork at the top of the 15-foot steel tube will not slip; nor will it stick into the tree, according to Jacobs. It will hold large or small trees and will prevent them from turning as they fall, since the follow-through spring maintains pressure of the fork against the tree as it falls.

The tree can be thrown straight away from the jack, or the jack can be set as an A-frame to throw the tree to the right or left. The special spring action permits this side throw which is sometimes useful on hillsides or with badly leaning trees. The hinged base of the jack folds as the tree falls, thereby remaining flat on the ground at all times. The base has lugs to prevent slipping on frozen ground or ice.

Further information on this tree felling jack may be secured from the company. Or use the Request Card at page 16. Circle No. 122.

Portable Gun-Type Welder

Bulletin No. 4940 issued by The Federal Machine & Welder Co., 212 Dana St., Warren, Ohio, fully describes that company's portable gun-type welder. It explains that this unit is in effect a spot welder which can be taken to the job. It derives its name from the portability of the welding head and the pistol-grip control with which many models are equipped.

The 8-page bulletin fully explains all mechanisms and component features of the Federal gun welder. The unit consists of a transformer, of kva capacity suitable to the application, the combination of controls required for the job it is to do; flexible cable and hose assemblies connecting the gun to the transformer and controls; a hanger unit from which the whole assembly is suspended; and electrical, air, and water connections from the transformer to the main control panel arranged to give the assembly flexibility. Both air or hydraulically operated guns are available for use with the equipment.

This literature may be obtained from the company, or use the Request Card at page 16. Circle No. 134.

A couple of International TD-18's with bulldozers convert an erosion scar between two Nebraska farms into a protected waterway. Brewster & Van Dusen was contractor.

Dirt-Moving Work Heals Erosion Scar

A recent earth-moving job done by Brewster & Van Dusen, contractor of Blair, Nebr., illustrates the way Nebraska contractors are using industrial know-how and equipment to help farmers save invaluable soil.

A gulley 20 to 25 feet deep and ½ mile long ran through a 300-acre and a 160-acre farm 5 miles south of Blair. The hazardous "canyon" badly impeded farming operations and threatened further damage from run-off rainwater.

Using two 11-ton International TD-18's equipped with bulldozer blades, Brewster & Van Dusen cut down the steep sides of the huge ditch, sloping the land gently back to cultivated fields on either side, and partially filled the gulley with dirt from the banks. What was once a dangerous erosion scar is now a strip of rolling land on which farming equipment can work easily and safely and productive acreage can replace wasteland. The strip was seeded with rye and brome as protective cover against further damage from heavy rains and flash floods.

Moreover, the contractor built three dams to slow the water that will flow over this natural pathway between fields. One of them required 1,000 yards of dirt and the other two took 2,000 yards each. The dams will also trap silt to fill the remaining low spots with a rich new topsoil.

New Ryerson Plant in Ohio

Joseph T. Ryerson & Son, Inc., has begun construction of a new and larger steel service plant and office building in Cincinnati. E. R. Nelson, Plant Manager, says that the decision to build a new plant came as the result of an increasing demand for steel in Ohio and the central South.

The plant will be located on Spring Grove Avenue, and is expected to be completed by fall. It will have a total floor space of 165,000 square feet and will be served by the B. & O. railroad.

New Caisson Bucket

A new self-emptying caisson bucket for use with winches, cranes, and similar lifting and carrying equipment for construction jobs requiring removal of earth, sand, gravel, dirt, grout, and muck has recently been announced by the Jolco Mfg. Co., 4026 W. Lake St., Chicago 24, Ill.

The rustproof bucket is made of galvanized iron with reinforcing bands designed to allow a long life of rugged usage. A unique feature is the specially designed handle complete with safety lock to provide safe and easy handling. The complete bucket measures 19 inches in diameter at the top and 16½ inches at the bottom, the height is approximately 27 inches. It holds 3 cubic feet of material.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 118.

A safety-lock handle features the new Jolco self-emptying caisson bucket. This rustproof bucket is about 27 inches high and holds 3 cubic feet of material.

1 MAN CAN DO THE WORK OF A CREW...

with an

ONAN *Portable* ELECTRIC PLANT

Use Electric Tools on Every Job!

Speed the work, cut costs on installation and maintenance jobs. Lightweight Onan air-cooled electric plants supply electric power anywhere for lights, drills, saws, hammers, spades and other motor-driven tools. Equipped with carrying handles or dolly-mounted. Take 'em anywhere and plug in for all the power you need.

SHIPPED COMPLETE READY TO RUN

Gasoline powered models— A. C.: 350 to 35,000 watts. D. C.: 750 to 15,000 watts. *Diesel plants:* 2,500 to 55,000 watts.

Write for Folder

Model 5CK, 5,000 watts D. C. Weighs only 315 lbs.

D. W. ONAN & SONS INC.
4857 Royalston Avenue
Minneapolis 5, Minnesota.

WHAT A LEADING TECHNICAL EDITOR WROTE ABOUT ALUMINUM TRANSITS AFTER ANALYZING HOW GURLEY MAKES THEM

Reproduced from a full-length article in the December 1949 issue of MATERIALS & METHODS, written by H. R. Clauser, its Associate Editor. We will gladly send you reprints of the entire article on request.

Aluminum Used Successfully in Precision Instruments

A PICTORIAL STORY

Requirements of accuracy during a long service life are controlling factors in selection of materials for engineering and surveying instruments.

● IN THE MANUFACTURE of precision instruments, the selection and careful processing of materials is of prime importance. Accuracy as well as long service life with a minimum of adjustment and repair are the quality standards that must be met, and to meet them, astute materials engineering coupled with expert workmanship are required. Perhaps no better example of the combination of these two factors can be found than at W. & L. E. Gurley, Troy, N. Y., where precision instruments are produced not only for engineering and surveying, but also for other fields such as meteorology and aeronautics.

Copper alloys and aluminum alloys are the principal materials used in the company's surveying instruments. One of the earliest uses of aluminum in this country was in a Gurley transit 73 years ago. And since that early application, aluminum has proved satisfactory in an increasing number of instrument parts. The main reasons for adopting the use of aluminum were: (1) light weight; (2) relatively high strength and yield point; (3) lends itself to precision machining; (4) good ductility; (5) relatively good corrosion resistance, especially in sulfur atmospheres; and (6) does not distort nor "grow" with age. The aluminum alloys most used at present are 14SW, 61ST, 356 and 13. A thorough test program insures against any differences in accuracy within a temperature range of —80 F and +165 F.

The accompanying pictures illustrate a number of the steps involved in the production of various parts making up the transit.

1—Shown here are the aluminum parts used in Gurley surveying instruments. At top, left and right is a 14SW forging for a horizontal transit limb before and after being machined, anodized and dyed. In the center is a sand casting of 356 alloy for the truss standard. Lower row, left to right, is a transit leveling head sand casting of 13 alloy, a swaged and spun tubing for telescope focusing slide of 51ST alloy, and a graduated vertical circle made of 61ST aluminum sheet which has been anodized and dyed.

You're So Right, Mr. Editor—

The first Gurley Aluminum Transit, built in 1876, was finally retired after 50 years of active service—and then for sentimental reasons only. It met every field "requirement of accuracy during a long service life"—as every Gurley Transit continues to do all over the world.

W. & L. E. GURLEY, FULTON & STATION STS., TROY, NEW YORK

Surveying and Engineering Instruments, Hydraulic Engineering Instruments, Standard Precision Weights and Measures, Paper and Textile Testing Instruments, Reticle Making Facilities, Aeronautical Navigating Instruments, Meteorological Instruments

GURLEY
Surveying and Scientific Instrument Makers
Since 1845

With its adapting tools, the Ottawa Hydra-Hammer can be used to break pavement, tamp and backfill, and drive or pull highway guardrails, posts, etc.

Small-Size Driver Handles Various Jobs

The Ottawa Hydra-Hammer multi-purpose tool, manufactured by the Industrial Division of Ottawa Steel Products, Inc., Ottawa, Kans., is basically a miniature pile driver, with adapting tools which make it possible to do several different types of work. The 400-pound hammer is actuated by a gasoline-engine-powered hydraulic system. Fully portable and designed for one-man operation, the Hydra-Hammer may be used for breaking concrete, asphalt, and other highway and street pavement. It may also be used for tamping and backfill work in trenches as deep as 12 feet, and to drive or pull highway guardrails, snow-fence posts, or sign and signal posts.

When driving posts, the hammer weighs 400 pounds. When equipped with a concrete-breaking head, it weighs approximately 460 pounds. The operator easily controls the power to deliver light tapping blows or hard smashes, as he desires. The hammer can be started, stopped, or reversed on a downward stroke. Complete control is achieved at all times by means of a new hydraulic control valve designed especially for the Hydra-Hammer. All types of posts, up to 8 inches in diameter, may be driven from a tilting tower which makes it possible to position posts at angles up to 15 degrees.

Latest application for the tool is the tamping of backfill trenches or permit-holes in pavement. With the use of a reversed hitch, the Hydra-Hammer can be towed by a tractor and operated by the tractor driver to make the entire tamping operation a one-man job.

With the use of a 4-foot extension on the main hammer head, ditches as deep as 12 feet can be tamped. According to Ottawa. the degree of compaction achieved makes it possible to pave the opening immediately, without fear of future settlement. The tools for this portable and versatile device include a ball head for concrete breaking, tamping tool, patch-remover tool, trimming tool, scoring chisel, and a post-pulling tool.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 26.

Timber Buying Information

A new and fully revised membership directory entitled "Where to Buy" has just been issued by the West Coast Lumbermen's Association, 1410 S. W. Morrison St., Portland 5, Oreg. Detailed information is given on sawmills, remanufacturing plants, timber fabricators, a wood pipe and tank manufacturer, and wood treating plants in the Douglas fir region of Washington, Oregon, and northern California.

Thirty-two new operations are listed in this edition, which gives a more exact breakdown of facilities and products manufactured by individual mills than has been possible in previous directories. Included are complete addresses of mills, sales offices and officers, production capacities, manufacturing and shipping facilities, and percentage production of each species. Inclusion of much new material makes it a handbook of buying information for Douglas fir, west-coast hemlock, western red cedar, and Sitka spruce.

This literature may be obtained from the Association, or by using the Request Card at page 16. Circle No. 43.

Warren to Assist Turner Head

Francis B. Warren has been appointed Assistant to President H. C. Turner, Jr., of the Turner Construction Co. He has been with the company since 1924, and for several years past has been Assistant Treasurer and Assistant Secretary.

HOT or COLD *Mix Asphalt*

DUST COLLECTORS
AIR WASHERS
ASPHALT TANKS
OIL TANKS
PUMPS

SIMPLICITY ASPHALT PLANTS

FEEDERS
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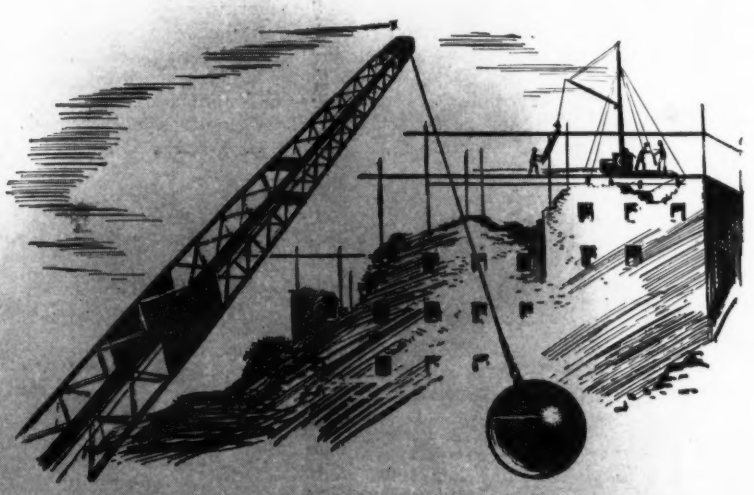
THE SIMPLICITY SYSTEM COMPANY
CHATTANOOGA, TENNESSEE, U.S.A.

Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope lasts longer; brings fewer shut-downs; cuts down replacement time; saves wire rope dollars.



For rope research and developments that help you save...

Today it's Roebling!

YEAR BY YEAR, industry makes new and more stringent demands upon wire rope . . . and Roebling leads in developing types that meet these demands with utmost efficiency and economy.

Take Roebling Preformed "Blue Center" Wire Rope with Independent Wire Rope Core!

No finer rope has ever been made, and its basis is "Blue Center" steel—an exclusive Roebling development. Its high resistance to abrasion, shock and fatigue spells long life . . . To this, Roebling *Preforming* brings the further advantages of new handling ease and improved performance . . . And the addition of I.W.R.C. assures top resistance to operating pressures and provides increased rope strength.

Roebling makes a wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man recommend the best rope for low-cost performance on each of your installations.

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JOHN A. ROEBLING'S SONS COMPANY, TRENTON 2, NEW JERSEY

Steel Transit Shed Is Built Along Docks

Structure Is 1,548 Feet Long by 200 Feet Wide; 100-Foot Steel Trusses Are Erected By Truck Crane at Mobile

(*Photo on page* 1)

✦ THE long transit shed for Berths 6, 7, and 8 at the port of Mobile, Ala., was recently completed, thereby increasing the capacity of the Alabama State Docks from 22 to 25 ships. The construction of the shed was divided into two contracts. One contract was for the portion paralleling Berths 6 and 7, or for a 1,000-foot length. The second contract continued the shed along Berth 8, and measures 548 feet along the center line. The 1,548-foot structure is 200 feet wide throughout.

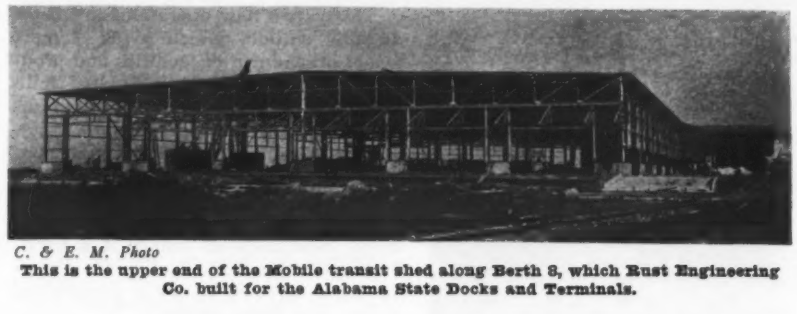
The construction was under the sponsorship of the Alabama State Docks and Terminals, a department of the State of Alabama. The work was supervised by J. P. Ewin, Inc., Engineers-Contractors of Mobile, as consultant. The two contracts for the construction of the shed were awarded to the Rust Engineering Co. of Birmingham, Ala., and Pittsburgh, Pa. Its low bid on the transit shed and concrete platform for Berths 6 and 7 of the marginal wharf was $779,258.50; for the shed at Berth 8 the winning bid was $497,199.25, or a total of $1,276,457.75.

Construction of the three new marginal docks began in the early part of 1948. (See C. & E. M., Nov., 1948, pg. 23.) By the summer, work was far enough along for the Rust Engineering Co. to start on the shed which was finished last October. The project is part of the $4,000,000 expansion program at the Alabama State Docks.

Steel Transit Shed

The 200-foot-wide steel transit shed runs the length of the new wharf, with its front elevation 31 feet back from the river face of the dock. The shed is thus supported partially on the wharf, which is 66 feet wide, and partially on the fill behind it. It has a concrete floor slab which extends 25 feet beyond the rear of the shed to a four-track layout 52 feet wide. Beyond the tracks, a 40-foot road also serves the wharf and shed. In addition to the rail connection at the rear, there is room for two tracks along the wharf in front of the shed. Inside, the transit shed has a 20-foot vertical clearance.

Like the marginal wharf that it parallels, the transit shed curves slightly at its upper end. The transverse roof trusses on 50-foot centers are supported on three columns spaced 100 feet apart across the width of the 200-foot-wide structure. Row A, the line of columns closest to the river, is supported on the concrete deck of the wharf. Row B, the middle line, and Row C, the inner line of columns, are supported on concrete footings with timber pile foundations. Thus two footings were constructed for every bent.



C. & E. M. Photo

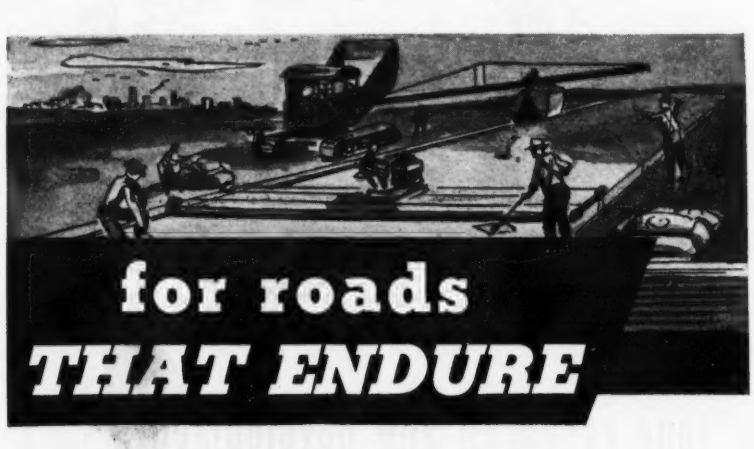
This is the upper end of the Mobile transit shed along Berth 8, which Rust Engineering Co. built for the Alabama State Docks and Terminals.

Three typical footings were used over most of the job. One of these footings measured 5 x 7½ x 2½ feet deep and was built over a 6-pile cluster. A 7-pile footing was hexagonal in shape with a 3-foot 9-inch radius and a 2½-foot depth. The third most widely used footing included eight piles supporting a 7½-foot square slab, 2½ feet deep. Each of the untreated-timber piles was designed for a 20-ton load. A few of the footings contained only four or five piles. The timber piles were driven by the Ernest Construction Co. of Mobile under a subcontract. Driving was done with a Vulcan No. 2 hammer.

Steel Erection

From the top of the footings, reinforced-concrete pilasters were constructed up to the level of the floor slab. These pilasters were usually 2 feet square, with short varying heights generally not over 6 feet. The steel

(*Continued on next page*)



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Proper curing of concrete is as important in the life of roads as the use of proper materials or satisfactory mixing and placing. The U. S. Department of Agriculture in extensive field and laboratory tests proved that cotton concrete-curing mats cure concrete more effectively than any other method.

Fulco Cotton Concrete-Curing Mats assure greater insulation against quick changes in temperatures . . . stay wetter longer with less water. These water retaining and insulating properties save you time and money. Concrete cured with Fulco Mats is all "set" to serve in 72 hours. Fulco Mats may be used many, many times, making the cost per job negligible.

Sturdily made of tough cotton, stitched edges and seams, filled with cotton padding weighing 12 oz. per sq. yard. A stitched 6" flap along the long side assures complete overlap from mat to mat.

SEE YOUR EQUIPMENT DEALER FOR PRICES OR WIRE DIRECT

Fulton also manufactures sturdy, top-quality Fulton Triple Strength Tarps, drop cloths and tents. Indispensable protection at economical prices.

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columns for Rows B and C were erected on top of these pedestals. The columns are usually either 14 or 16-inch H-beams, and average 30 feet in length. The structural steel, totaling nearly 1,500 tons, was supplied by the Virginia Bridge Co. of Birmingham, Ala., and erected by the Nettles Erection Co. of Mobile. The reinforcing steel came from Truscon Steel Co. at Birmingham, Ala.

Practically all the steel was erected by a Diamond T truck crane equipped with a 35-foot boom and a Tulsa winch. The twelve wheels on the truck enabled it to move around with the minimum of difficulty despite heavy going in the sand that had been dredged from the river for hydraulic fill. The steel was shipped to the site by rail over the Alabama, Tennessee & Northern.

The usual procedure was to erect first a truss in the outer Row A line of columns, then a transverse truss for the 100-foot span between Row A and Row B. Then a 50-foot truss was put up in Row B, followed by another 100-foot truss between Row B in the center and and Row C on the inside. Next the rectangle was completed with the erection of a 50-foot truss in Row C. The intermediate trusses running longitudinally down the structure were also installed. Thus there are five longitudinal rows of trusses in the transit shed.

The transverse 100-foot trusses were the largest members to be erected. They came in two 50-foot sections and were assembled on the ground, bolted together, and raised by the truck crane as a single truss weighing from 8 to 10 tons. The truck crane picked up these large trusses, rolled into position, and then erected the heavy steel section. The steel was drifted, bolted, lined, and plumbed, then riveted together.

Flat Trusses

Warren-type trusses were designed for the shed. The 200-foot transverse trusses are 8 feet 4 inches deep at the outside column lines and 12 feet 6 inches deep at the center. The pitch is taken care of by the top chord, with the bottom chord parallel to the floor and affording 20-foot vertical clearance. With respect to the longitudinal rows of trusses, the outer trusses are 6 feet 1 inch deep, while the center and intermediate rows are 7 feet 7 inches deep.

The columns form bays 50 x 100 feet. To protect these columns from being struck by trucks or whatever, they are encased in 26-inch-diameter steel shells which extend to a height of 14 feet above the floor. The space within the shells is filled with concrete. The alternate outside bays of the shed are cross-braced. The roof purlins are steel to which are bolted wooden nailer strips. The roof itself is 2 x 6 tongue-and-groove pine sheathing covered with a five-ply Flintkote No. 15 saturated felt. The roofing was subbed out to the Mazer Roofing & Heating Co. of Birmingham, Ala.

The steel arrived on the job with a shop coat of zinc chromate primer. After it was erected, the steel was painted with two field coats of aluminum paint, which was also applied to the roof sheathing. The painting was also done under a subcontract by Williams & Brantley Co. of Birmingham, Ala. The paint was sprayed on with De Vilbiss guns from tall tower scaffolds which were shifted about inside the shed.

Concrete Floor Slab

Once the protecting roof was put on, the concrete floor slab was poured inside the shed. The foundation for the slab is sand that had been pumped from the Mobile River in a previous dredging contract. The sand was well soaked with water to compact it thoroughly before any concrete was placed. A 35-foot strip of concrete had already been poured along the river side of the shed as part of the wharf. This terminated in a hinge joint that ran the length of the structure. Under this joint the sand was jetted into place. This particular joint was designed to compensate for any settlement that might occur in the transit-shed floor and to eliminate any bumps for trucks to run over. An air void was created at the bottom of the slab with a light-gage galvanized metal pan. If settlement does take place the pan will give gradually and the resulting open joint can be filled with H-compound. This prevents any protrusion such as might result from a slab tilting.

On the sand backfill a 7-inch reinforced-concrete floor was laid. This consists of a 6-inch slab of 3,000-pound concrete, covered with a 1-inch topping or hard wearing course of traprock concrete. The topping was put on before the lower course had set up. The upper-course mix was made up of one part each of cement and sand, and two parts of traprock with a ⅜-inch gradation. Transit-mix concrete for the job was supplied by the Radcliff Gravel Co. of Mobile, and it was carried to the forms in rubber-tired buggies. Pouring was done in large blocks, usually either 67 x 50 feet, or 20 x 50 feet. The surface was finished with a power trowel, then roughened slightly with burlap so that it would not be too smooth for the safe operation of vehicles.

For drainage the floor slopes both ways from the center of the shed. Down the length of the building 1-inch ex-

(*Continued on next page*)

AEROIL HEET-MASTER KETTLES FOR ROAD & STREET BUILDING & REPAIR, NOW AVAILABLE IN 230, 330 & 500 GAL.

Save 50% on Fuel & Time

Now the famous HEET-MASTER Kettle, that does the work of two bottom fired kettles, is available in the larger sizes for big repair and paving jobs. (Ask for Bulletin No. 400R.) Other Bulletins you'll want to have on file:—No. 171 Asphalt Surface Heaters & Paving Tool Heaters; 502 Aeroil 400 to 600 Gal. Utility Trailer Sprayers; 397Y All Steel Tool Boxes; 637 Cut Back & Emulsion Sprayers; 174 Burners & Torches. Be sure you have these valuable FREE Bulletins handy for reference on your present and future equipment needs. ALL AEROIL Products are guaranteed for a full year against defects in workmanship and materials. Experience of over 32 years assures you of the finest and most economical equipment.

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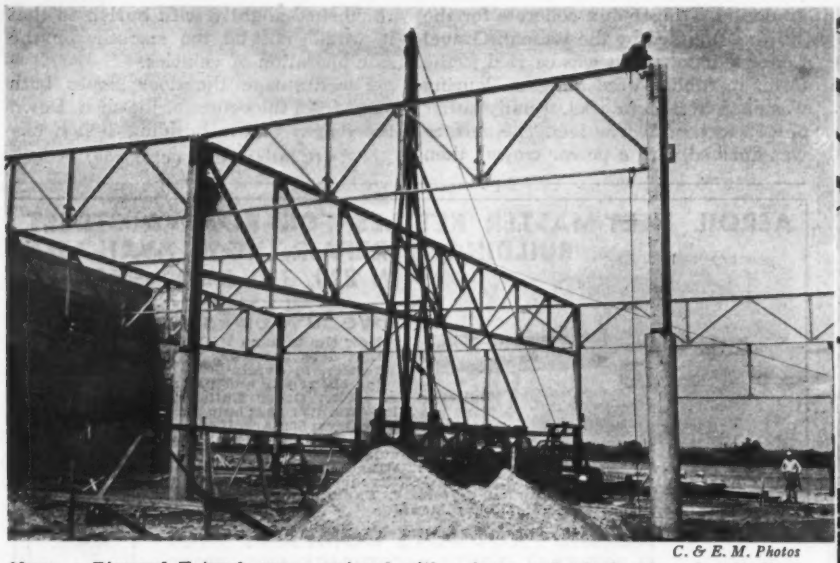


C. & E. M. Photos

Above, a Diamond T truck crane equipped with a boom and winch sets a longitudinal truss in the center row of the transit shed. At right, the riveting crew in action—the heater on the ground tosses red-hot rivets to the catcher on the platform.

Steel Transit Shed Is Built Along Docks

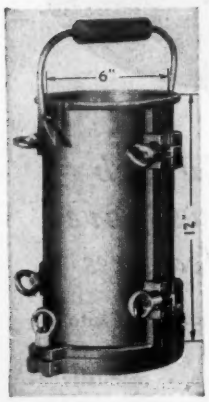
(*Continued from preceding page*)

pansion joints were left at intervals of 250 feet. In the concrete these joints are premolded fiber which was left 1½ inches low. During the pouring operations the slot was filled with a strip of wood. The wood was later removed and the crack filled with plastic joint filler. Double columns were erected at these joints so that a 1-inch opening for expansion might be carried up through the steel. The roof likewise has a 1-inch slip-joint opening protected by copper flashing. The concrete was cured with a membrane compound, and no machinery was allowed on it for a period of two weeks.

Corrugated-Metal Siding

The walls of the transit shed are built of 22-gage corrugated-metal siding supplied both by Republic Steel Corp. and the Tennessee Coal & Iron Co. The Nettles Erection Co., which erected the structural steel, also installed the siding. Every 50-foot bay has a door on each side. The doors are the rolling overhead type constructed of steel, and furnished by the North American Iron & Steel Co. of Birming-

(*Continued on next page*)



STOCK SIZES:
Model A 6x12"
Model B 8x16"

This
CONCRETE TEST CYLINDER MOLD
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Accurately machined to produce concrete samples of exact measurement. Sturdily made of refined malleable iron. Strong bronze wing nuts and swing bolts. Inside dimensions shown above. Portable. Your order will be promptly handled. If you want additional information write

MOLINE IRON WORKS
MOLINE, ILLINOIS, U.S.A.
(Seventy Years of Service)

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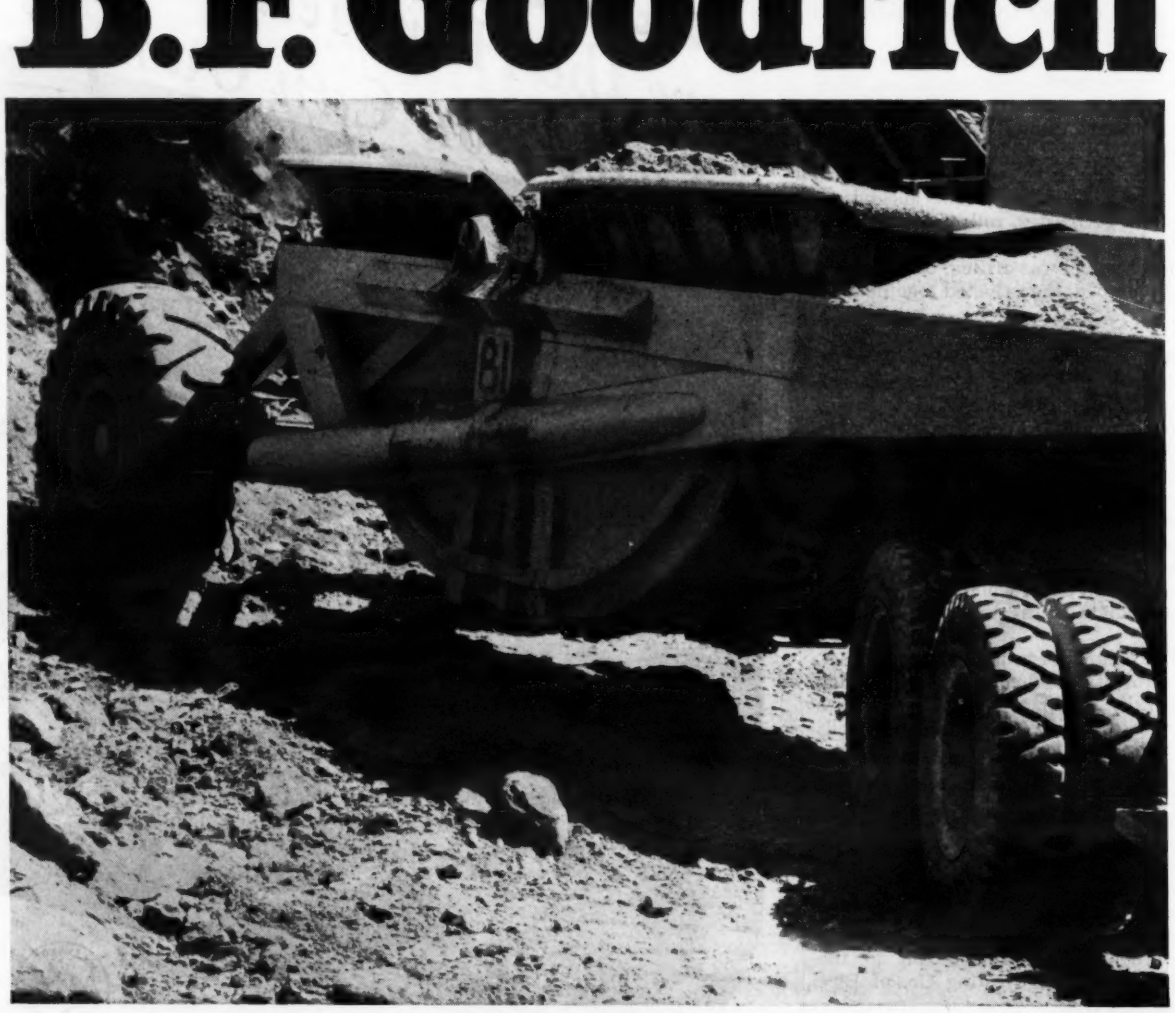

ALL-NYLON tire record:
no blowouts, no bruise breaks, no flex breaks!

THE B. F. Goodrich ALL-NYLON tire is proving successful on construction projects all over the country. The record speaks for itself — up to now no blowouts, no bruise breaks, no flex breaks! And that includes severe operating conditions on jobs where flex and bruise failures formerly were common.

Along with nylon, BFG uses weftless construction; no cross-threads in tire plies to hamper cord action and allow some cords to stretch out. Therefore, tire growth is reduced—tires last longer.

Nylon tires always provide big savings on construction projects, in quarry and other operations where heavy loads and rough terrain have made tire costs high.

The new, all-nylon construction is typical of the continuous improvements being made in tires by B.F.Goodrich. Long ago, BFG engineers developed special types of tires for construction and other off-the-road service. For more information on the way B.F. Goodrich tires can do more work and save you money, call your BFG dealer —or write directly to *The B.F.Goodrich Company, Akron, Ohio.*

C. & E. M. Photos

Interior shots of the Mobile dock shed. Above, workmen give a burlap finish to the recently poured concrete floor slab. At right is a painters' tower scaffold. The Virginia Bridge Co. of Birmingham, Ala., supplied the structural steel for this project.

ham, Ala. Most of the doors are 24 feet wide x 14 feet high, with a few being 18 feet high.

In the roof, which has a pitch of ½ inch to the foot from the center line, are 187 skylights, each measuring 8 feet 2 inches x 5 feet 8 inches. There are also 140 ventilators, each 3 feet 3 inches square.

The door posts are protected against bumping by 8-inch-diameter concrete-filled guard pipes. If any water is blown under the doors it is trapped in a slot through the wharf just inside the entrance, where it falls into the river.

Two fire walls are also included in the contract. One wall separates the transit shed for Berth 8 from that of Berths 6 and 7. The other wall is at the end of the 1,000-foot shed for Berths 6 and 7. The walls are of reinforced concrete averaging 13 inches in thickness and 200 feet wide, with a 20-foot wing on each side. They were poured in plywood forms with the help of a crane and a 1-yard concrete bucket.

Other concrete work included the construction of a 6-inch concrete wall and footing at the end of the 25-foot loading platform at the rear of the shed. The platform is at railroad-car height from the ground.

Intercepting Sewer

Not part of the transit-shed construction, but an important feature of the new marginal wharves, is a new 1,692-foot intercepting sewer which was built under a separate contract by the Espy Paving & Construction Co. of Savannah, Ga. The new sewer collects drainage from several lines which flowed through streets since cut off by the marginal docks. The sewer is built of reinforced concrete with 12-inch walls and roof; where it passes under the railroad yards, the roof slab is increased to 15 inches and the sewer is pile-supported. On the inside the sewer is 7 feet wide, and varies in depth from 3 feet at its upper end to 8 feet at the river into which it empties. The top of the structure is level throughout, with the depth varying at the bottom slab.

(*Concluded on next page*)

Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today
NATIONAL DISTRIBUTION BY
WM. H. ZIEGLER CO., Inc.
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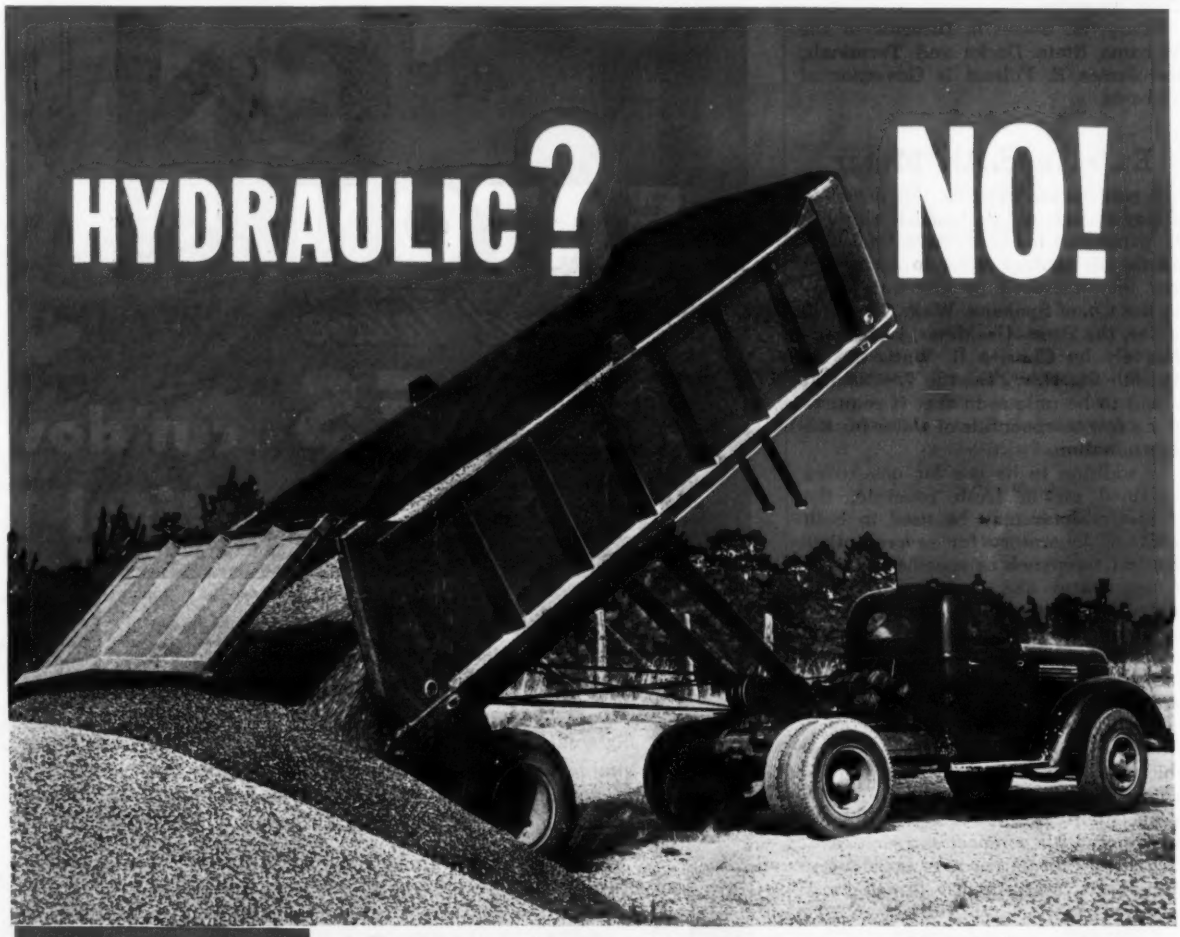
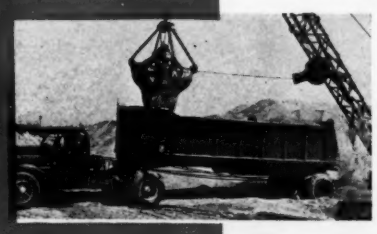


No other unit can hope to match the *cable-operated* Clement Dump Trailer in unloading on rough terrain, spread dumping, spot dumping, or angle dumping. The CLEMENT TRAILER is the only unit that can successfully dump when the rear wheels of the trailer are at a severe angle of as much as 25°.



CABLE OPERATED CLEMENT DUMP TRAILERS . . .

can move more loads faster, more economically with trouble-free performance than any dump unit on the market. Construction contractors and gravel haulers who have used the cable operated dump trailers over the past 3 years find that they can be successful low bidders because of bonus loads and the bigger pay loads made possible by the sturdy but light-constructed Clement.

We invite your inquiries and will send by return mail a free catalogue on the Clement dump trailers which range in size from 8 to 24 cubic yards.

TO DISTRIBUTORS:
There are still a limited number of areas open for dealership. Write today.

Clement
DUMP TRAILERS

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WINCH-LIFT, INC.
FIRST NATIONAL BANK BUILDING . . . . SHREVEPORT, LOUISIANA

FREE BOOKLET . . . MAIL TODAY!
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Please send me the FREE booklet on the money-saving Clement "500"

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Address .....

WINCH-LIFT, INCORPORATED SHREVEPORT, LOUISIANA

Steel Transit Shed Is Built Along Docks

(Continued from preceding page)

Quantities and Personnel

The major items in the two contracts held by the Rust Engineering Co. for the construction of the transit shed included the following:

	Berths 6 and 7	Berth 8
Untreated-timber pile	14,760 lin. ft.	6,000 lin. ft.
Excavation	15,000 cu. yds.	8,000 cu. yds.
Concrete	5,300 cu. yds.	3,000 cu. yds.
Traprock. finish	20,000 sq. yds.	12,500 sq. yds.
Reinforcing steel	545,000 lbs.	375,000 lbs.
Structural steel	1,942,500 lbs.	1,050,000 lbs.
Roof sheathing	2,030 sqs.	1,100 sqs.
Corrugated-metal siding	405 sqs.	285 sqs.

A force averaging 175 was employed by the Rust Engineering Co. under the direction of Phil J. Pedone, Superintendent. Dave J. Watkins was Field Engineer, and John W. Clarke was Office Manager.

For J. P. Ewin, Inc., the consulting engineering firm which directed the construction, V. L. Taylor was Resident Engineer, assisted by N. S. Bradberry, Field Engineer, and Henry Hiden, Jr., Chief Inspector.

Henry W. Sweet is Director of the Alabama State Docks and Terminals, and James E. Folsom is Governor of Alabama.

Entrained-Air Meter

A new meter utilizing the principle of Boyle's law and designed to simplify the procedure for accurately determining the air content of fresh concrete is now manufactured by Concrete Specialties Co. of Spokane, Wash. This new device, the Press-Ur-Meter, is sold exclusively by Charles R. Watts & Co., 4121 6th St., N. W., Seattle 7, Wash. It is said to be unique in that it requires only a few teaspoonfuls of water for the determination.

In addition to its use for measuring entrained air in fresh concrete, the Press-Ur-Meter may be used in both field and laboratory for several other physical tests such as specific gravities of aggregates and cement, and free moisture of aggregates. Its features are said to include accuracy; exact 0.250-cubic-foot volume; light weight; a clamp that is quickly and easily adjustable; an integral method of testing the accuracy of the meter; compactness, with a built-in pump and release valve which closes automatically when not in use; and readings unaffected by changes in barometric pressure. The meter is available with a compact carrying case.

Further information may be secured from Watts & Co. Or use the Request Card at page 16. Circle No. 135.

Truck-Tire Equipment

Two valuable truck-tire accessories are described in a circular recently issued by Branick Mfg. Co., Inc., 810 Front St., Fargo, N. Dak. The Branick truck-tire safety cage is designed to safeguard service men against blown-off side or lock rings during inflation of truck tires. The mounted tire is easily rolled into the cage and inflated while the service man remains safe from injury. This device can also be used for blowing off sides of tires which are rusted on, after the lock ring is removed. The cage is designed to carry any tire within the 14:00 x 24 sizes. For larger tires, the man may get inside the cage and the tire leaned against it.

The Branick air-operated truck-tire remover is the other unit described and illustrated in the circular. Originally intended for use with the Big Hand, the Branick remover is also designed for use as a portable remover for loosening stuck, rusted, and frozen truck tires.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 92.

Heads Mack Atlantic Division

J. M. Donahue, Vice President of Mack-International Motor Truck Corp., has been named Manager of the company's Atlantic Division, with headquarters in Philadelphia. He will direct all Mack sales and service activities in Pennsylvania, Delaware, Maryland, and the District of Columbia.

Here is the entrance and exit ramp at the west end of the K Street elevated expressway approach to the Francis Scott Key Memorial Bridge over the Potomac River in Washington, D. C. The expressway, named the Whitehurst Freeway after the former D. C. Director of Highways, will relieve traffic congestion in downtown Washington and eventually tie in with the Washington-Baltimore Freeway. Alexander & Repass Co. of Des Moines built the first section for $3,294,000.

Vulcan Tools

A complete line for every type of Rock Drill, Pavement Breaker and Clay Digger.

Vulcan Tool Manufacturing Co.

35-43 Liberty Street, Quincy, Mass.

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74 Murray St. New York, N. Y. **34 No. Clinton St. Chicago, Ill.**

EATON

2-Speed Truck

AXLES cut down Stress and Wear on Vital Truck Parts

Eaton 2-Speed Axles *double* the conventional number of gear ratios, enabling drivers to use the *right* gear ratio for every operating condition—starting out under full load, climbing grades, highballing, quick shifting in traffic. As a result, vital truck parts are not overstressed, engines are permitted to run at most efficient speeds, minimizing engine wear. Furthermore, Eaton Axles last longer, because planetary gearing better distributes gear-tooth loads, reducing stress and wear on the axle itself. Ask your truck dealer to explain how Eaton 2-Speed Axles more than pay for themselves.

Axle Division

EATON MANUFACTURING COMPANY

CLEVELAND, OHIO

PRODUCTS: SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS • SPRINGTITES SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

The 7-inch Junior Sander is a side-handle model designed for light sanding, metal finishing, touch-up body work, removing rust, wood surfacing, and similar light-duty operations.

New Portable Sander

A new portable electric tool, the 7-inch Junior Sander, has been announced by The Black & Decker Mfg. Co., Towson, Md. This lightweight balanced unit is designed especially for service in shops requiring only intermittent sander use. The 7-inch Junior Sander is recommended by the company for light sanding, metal finishing, touch-up body work, removing rust, wood surfacing, and similar light-duty operations. It is a side-handle model with a convenient reversible auxiliary side handle for either right or left-handed use. Housings are aluminum castings and the sander has heat-treated gears and grease-sealed ball bearings throughout. The no-load spindle speed is 3,500 rpm.

The new tool is equipped with a convenient spindle locking pin for speedy changing of sanding disks and other attachments. Other standard equipment includes a 7-inch molded rubber pad; three 7-inch sanding disks; a clamp washer; and a 3-conductor cable and plug. It is powered by a Black & Decker universal motor for operation on ac or dc currents and is available for 115 or 220 volts. On special order, 125 or 240-volt motors can be supplied.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 123.

Flameproofed Tarps

A line of flameproof tarpaulins, guaranteed to meet the fire-resistant requirement of Federal Specification CCC-D-746, is offered by the Admiral Canvas Products Co., 1055 N. Rockwell St., Chicago 22, Ill. Ruggedly constructed throughout, the tarps have seams which are double-stitched for extra strength and hems which are securely lock-stitched to prevent ripping. They have rustproof grommets at each corner and approximately 4 feet apart all around, set in reinforced patches to prevent pulling out. The Admiral line of flameproof tarpaulins and the Para waterproofed tarpaulins are made of genuine canvas duck and are available in weights of 10, 12, and 14 ounces per square yard before treatment, in sizes from 6 x 8 to 20 x 24 feet.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 27.

Danuser Completes New Plant

Celebrating its 40 years in business, the Danuser Machine Co., manufacturer of the Danuser Digger and the Danuser All-Purpose Blade, announces that its new factory at Fulton, Mo., has been completed. It is designed to permit work flow with a minimum of material handling, and precision manufacturing facilities with line-production assembly.

Full Diesel Line Presented

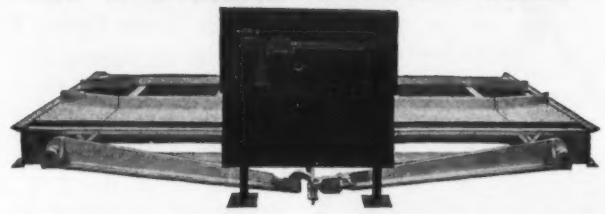
Sixty-eight high-speed diesels for automotive, industrial, and marine applications, covering a power range from 50 to 550 hp, and three medium-speed diesels, are described in a 36-page condensed catalog recently issued by Cummins Engine Co., Inc., Columbus, Ind. The catalog lists the 27 new Cummins models introduced within the last 12 months.

Comparative charts listing major specifications for each engine are included. Torque, horsepower, and fuel-consumption data at all rpm and load conditions within the range of each engine are presented in curve form. Each engine is pictured, with a listing of standard equipment and notations on optional equipment which can be supplied. One of the features of the book is a complete silhouette drawing which indicates the mounting dimensions for all engines, and shows at a glance the range of horsepower available in almost the same mounting dimensions. Cutaway drawings indicating major mechanical features of all Cummins diesels are included, plus a cutaway and complete description of the Cummins diesel system.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 114.

WINSLOW—PORTABLE TRUCK SCALE

"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site.

Capacities: 15-18-20-30 Ton—Write us for your nearest distributor

Mfd. by: WINSLOW SCALE COMPANY

P. O. Box 1198 Terre Haute, Indiana

DORSEY Low Bed Trailers

Make the Heavy Jobs Light

IN WASHINGTON, D. C., this Dorsey MT-60 Drop Deck Machinery Trailer, operated by Merchants Transfer and Storage Company, is moving a 54-ton Westinghouse transformer for the Potomac Electric Power Company.

John Newbold, president of Merchants, says: "I bought my first Dorsey low bed because it was the only trailer I could find to fit my specific needs. I like it so well that I bought two more."

Model MK — 10—15 Tons

Model M — 15—20—25 Tons

Model MTS — 15—20—25—30—35 Tons

Model MT — 35—40—50—60—75 Tons

Dorsey's low loading height simplifies loading from rear or sides and increases stability of top-heavy loads.

Conservative capacity ratings and oversize tires provide a wide safety margin for heavy loads . . . tire changing is simple because there is no side skirting around wheels . . . large braking areas add to the efficiency of powerfully actuated brakes.

Your Dorsey distributor will give you proof of Dorsey's safe, economical road performance . . . will explain in detail the special construction features that give you the trailer you want for any job at a *new low price.*

DORSEY TRAILERS, INC. • ELBA, ALABAMA

Mixing Stunt Speeds Earth Dam Job; Dam Concrete Mixed in Road Paver

Ground water at Dickinson Dam was whipped by installing several hundred Stang wellpoints on 2 and 4-foot centers.

Dirt and Concrete Rise Above Riverbed as Imaginative Outfit Beats Every Estimate

By RAYMOND P. DAY,
Western Editor

✦ HIGH up in the Missouri Basin, in the Dickinson Unit of North Dakota, Adler Construction Co. has astounded the officials of the U. S. Bureau of Reclamation by moving far out ahead of schedule on the $1,034,071 Dickinson Dam. With 800 calendar days allowed from the April, 1949, starting date, the dam is now eighty-five per cent complete with only about thirty-five per cent of the allotted time elapsed.

There are several reasons for the unusual performance record. Adler has not been afraid to experiment. Neither has he forsaken many of the old time-tried principles of good construction. At Dickinson Dam the company blended the two together to everyone's advantage, with the result that Heart River will have a checkrein on it at that point much sooner than was originally anticipated.

The dam, a 2,200-foot earth-fill structure 45 feet high above the river, was designed and engineered by the Denver Office of the U. S. Bureau of Reclamation. The dam has three purposes. It will furnish a lake and reservoir to supply drinking water to Dickinson, it will help to curb floods on the Heart River, and it will irrigate about 1,000 acres of farmland near by some time in the future.

A Small but Tricky Dam

Dickinson Dam, if compared to the mammoth Garrison project less than 200 miles away, would be small indeed. Nonetheless it is a sizable project, containing nearly 300,000 cubic yards of earth embankment and 7,300 cubic yards of concrete. Problems peculiar to Dickinson Dam included a bad ground-water situation, and a difficult job of mixing borrow-pit materials to obtain the best possible densities.

The earth fill consists of two zones. Zone 1, which comprises the main part of the embankment, contains impervious sand, clay, and other soil. Zone 2 is a semi-pervious block near the downstream toe. Rock riprap, which will have to be hauled 32 miles, will cover the upstream face of the dam. The downstream face will be seeded.

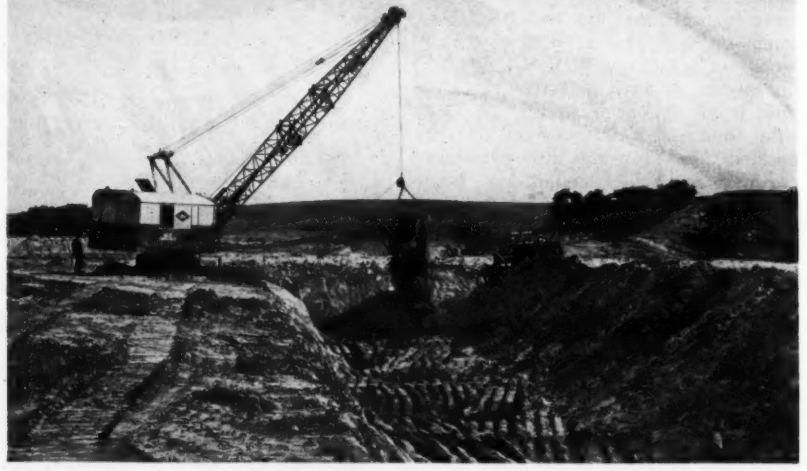
The spillway and outlet works structure, located near the right abutment, consists of an approach channel, an uncontrolled open-channel spillway 200 feet wide, a stilling basin, and the outlet works. The latter is located on the left wall of the spillway, and consists of a trash rack, a gate structure, a 24-inch outlet pipe, and a valve box. When the city of Dickinson signs its water contract with the Bureau, it will take its supply from the outlet structure.

The reservoir will have a conservation storage pool of 5,900 acre-feet be-

(Continued on next page)

C. & E. M. Photos

Here a 90,000-gph Marlow pump pipes the Heart River through the project. Notice the unusual standpipe to fill water tank trucks. A loaded Terra Cobra travels the haul road.



In the borrow pit, a Lima dragline with a 2¾-yard bucket mixes earth, as a D8 at right levels the pile. Terra Cobras made the average haul of 2,500 feet.

Highway Unit Takes Spotlight As Concrete for Dickinson Spillway Formed and Placed

✦ APPROXIMATELY 7,300 cubic yards of concrete in the spillway and outlet structure of Dickinson Dam were placed with emphasis on time-tested methods. Adler Construction Co. of Madras, Oreg., is the contractor doing the $1,034,071 project for the Billings Office, U. S. Bureau of Reclamation.

The use of excavations for ramps and accessways for various pieces of concrete equipment, a practice as old as construction, worked favorably here. In several places it speeded the work. At the railroad track unloading point where sand and aggregates came in, the excavation of a truck pit saved a conveyor set-up and sent the material to the batch plant as fast as it was required.

The batch plant, set up against a bank dug off vertically by a dragline, was accessible from the top, which saved another conveyor and put the plant in reach of the loader which had to work there anyway.

Forms Built in Central Yard

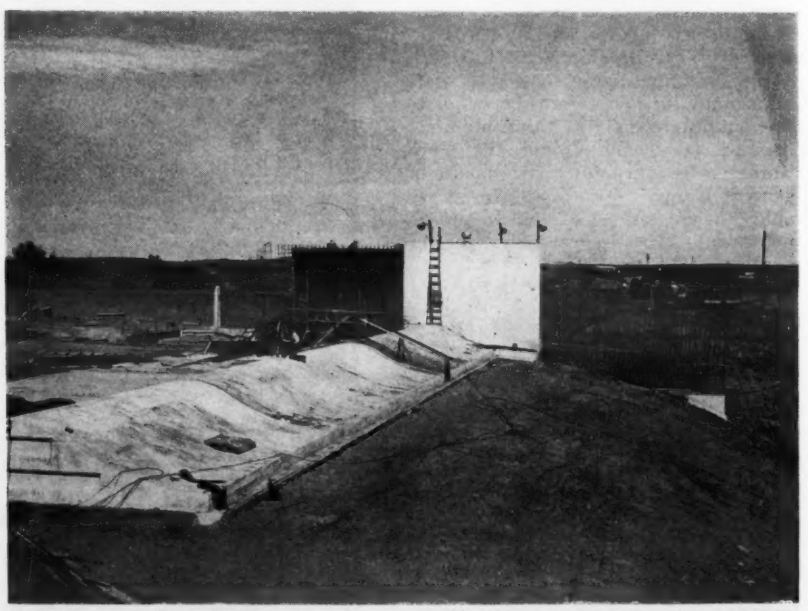
Dickinson Dam, no easy form-building assignment because of tricky layout work, was built by prefabricating the concrete form work in a central yard near the job office. Here at this yard were located a radial SkilSaw, a platform saw, two smaller portable SkilSaws, and a Mall power saw.

All of the concrete which was to be covered by earth work was faced with Douglas fir shiplap. That which will be exposed to the public was faced with plywood, nailed over ¾-inch lagging. Plywood facing included all the exposed concrete on the inside of the spillway walls, and that in the training walls which can be seen after the dam is done.

The spillway walls are generally from 18 to 32 feet high, 12 inches wide at the top, with a taper to 36 inches at the base. They are set on heavy concrete footings which rest on solid material,

(Continued on page 69)

Adler workmen get things ready for a concrete pour in the foundations along the left side of the spillway. Concrete was batched in a Noble plant and mixed in a Rex 34-E paver.



Looking across the spillway, we see the ogee section under construction, the left spillway walls, and fill equipment working in the background.

tween elevation 2,404.67 and 2,416.5. It will have a flood storage of 18,000 acre-feet up to elevation 2,428.9, which coincides with the top of the spillway ogee. During peak floods the reservoir is rated at 27,048 acre-feet, but at such a time the water will be pouring over the spillway crest.

Bad Dewatering Problem

Plans for the core trench showed an excavation about 20 feet deep below natural ground, with a bottom width of 40 feet. Because of ground water, the trench could not be excavated to its full depth before it was unwatered. The scheme of dewatering and river diversion also caused some concern when the old riverbed was removed to solid material.

The diversion scheme consisted of a temporary diversion channel, dug by dragline, near the north end of the dam. A cofferdam made of earth then shunted the Heart River through this ditch while first-stage construction was in progress. After the first stage was in, and all equipment was ready for a rush job, the river was picked up by a 90,000-gph Marlow pump and piped through a 6-inch line through the project by training it over the fill.

In the first-stage diversion, excavation was attempted as soon as the river was diverted. Ground water immediately began to seep through, with still about 15 feet more to go.

Several hundred Stang wellpoints were then installed for a distance of about 400 feet, parallel with the core trench. Each row of points was placed on the berm at the top of slope. Two pumps were then put to work to dewater the area.

The installation of these wellpoints was extremely difficult. A layer of Fort Union sand, with bedded gravel and small boulders, lay in the path of the points. At first they tried to jet them in with a 6-inch pipe, but this failed utterly in the hard going. Reasoning that there must be some way to get the casing down to about 2 feet below project grade, Adler's men took the situation into their own hands.

At the shop, they built a 4-inch pipe jet with a necked-down nozzle to develop high pressure. On every side of this jet they welded railroad rail steel to give it as much weight as possible. By working this inner jet inside the regular casing, and lowering it on a temporary hoist rigged on the back end of a tractor, they made some progress. When they welded a crosspiece on the jet gooseneck to beat on the casing at the same time they jetted, they got results. From that point on they had no more trouble, because the combination of jetting and driving sank the large-diameter pipe through the toughest gravel and soapstone they found.

Once the pipe was down to grade, it was flushed out clean with the water jet. The wellpoint was then lowered, and granular sand poured in to fill the pipe solid. This put the desired filter around the wellpoint. Then the casing was pulled, leaving the point in place. The wellpoints had to be placed on 2 and 4-foot centers to get the desired results.

C. & E. M. Photo
A Wooldridge Terra Cobra comes in to the fill at Dickinson Dam and dumps its load.

Excavation of the core trench then went ahead, either by a Lima dragline and Ford trucks, or by the fleet of Terra Cobras which was used on the fill.

The excavation and stripping of the dam foundation where Heart River had run so many years was another bad problem. Even though the wellpoints dewatered the area, the ground in the old riverbed was muddy, soaking wet, and full of slime. Two D8's with 10-foot bulldozer blades worked together, with the corners of their blades touching, to shove the mud and slime off to one side. It was then picked up and loaded out by the Lima dragline. Strangely enough, the mud suddenly ended on a solid foundation of Fort Union material: a blue-gray sandy silt which is solid even when waterlogged.

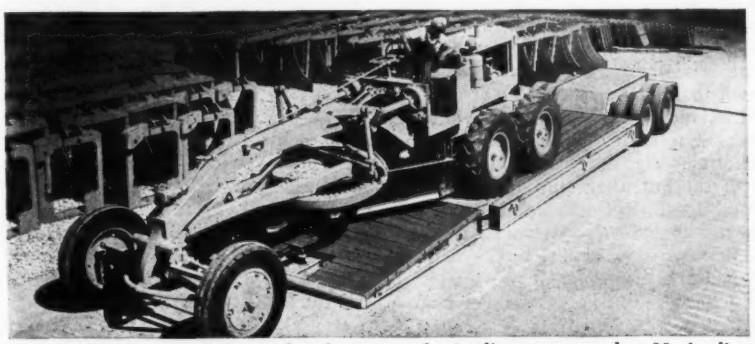
Not taking any chances with the ground water, the fleet of 4 Wooldridge Terra Cobras raced in directly behind the bulldozers with loads of fill material. Another machine spread this out on the dam foundation, and a double Gebhard tamping roller went to work. After about 2 feet of fill had been placed, the foundation was perfectly stable and the ground water no longer showed any tendency to come up.

This was a good thing. The wellpoint installations seldom were effective longer than about 2 weeks, because the nature of the soil caused them to

(Concluded on next page)

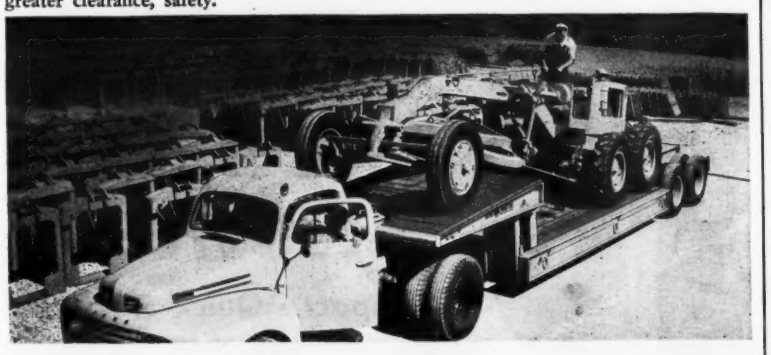
LOADING MOTOR GRADERS MADE EASY BY FOLDING GOOSENECK

Loading equipment quickly, and without ramps or cribbing is possible with a new patented "Carryhaul" Folding Gooseneck recently introduced by the Martin Machine Company, Kewanee, Illinois. The new trailer features a Folding Gooseneck which, when lowered to the ground, forms a loading ramp. Front end loading permits a very low platform height, assuring greater safety, greater clearance of viaducts, bridges, wires. The new trailer is avialable in capacities up to 100-tons. Like other Martin "Carryhaul" trailers the new Folding Gooseneck is being sold exclusively through "Caterpillar" dealers everywhere.



New Folding Gooseneck lowered to form ramp for loading motor grader. No loading ramps or cribbing are required. Loading is completed in a few minutes.

Below: Folding Gooseneck raised to towing position. Low platform height offers greater clearance, safety.



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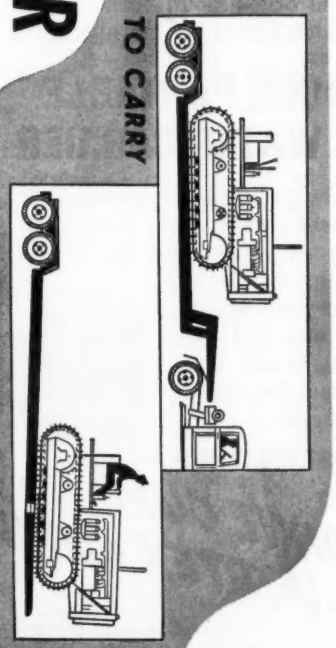

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Mixing Stunt Speeds Earth Dam Schedule

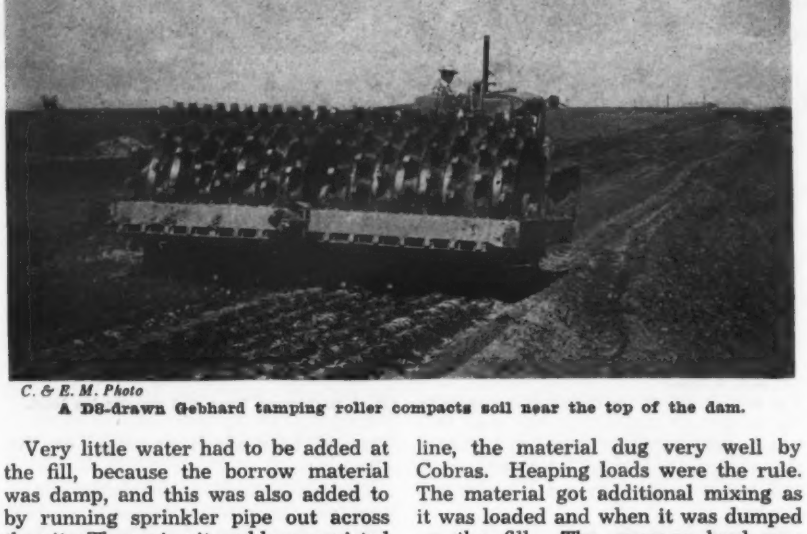
(Continued from preceding page)

silt in and plug, which reduced their efficiency. They worked long enough at a setting to get the job done. Three separate settings of the wellpoint system were required to cover the entire core trench.

Embankment Progress

The earth-moving equipment for loading, hauling, and processing the earth embankment was selected strictly on the basis of its ability to deliver continuous performance, and to finish the embankment insofar as possible as it went along.

The hauling units consisted of 4 Wooldridge Terra Cobras. A Lima dragline with a 65-foot boom and a 2¾-yard Hendrix perforated bucket was also used to mix borrow-pit material, and occasionally to load a fleet of 8 Ford dump trucks.



C. & E. M. Photo

A D8-drawn Gebhard tamping roller compacts soil near the top of the dam.

Very little water had to be added at the fill, because the borrow material was damp, and this was also added to by running sprinkler pipe out across the pit. The main pit problem consisted of mixing of materials, which was required by Bureau of Reclamation engineers. The engineers had recommended that pit loading be done by a power shovel against a 12-foot bank, as is being done near Glen Ullin, N. Dak., on Heart Butte Dam.

Harold C. Adler, partner of the company which bears his name, reasoned otherwise, and as it turned out, his guess was correct. Had he tried to use a power shovel against a bank that high, the shovel and all of his hauling units would have been slogging around the pit in mud and water, for the ground water lay too close to the working line.

Adler tried out an unorthodox scheme, as an alternate. It worked. He put the Lima dragline with its 2¾-yard bucket in the pit, and by taking a cut through to the water line and casting to one side, he successfully mixed the pit by that method. It is believed to have a number of advantages over shovel loading.

First, most of the field men believe they get a better mix. The dragline bucket also digs from the bottom to the top of the cut, the same as the shovel dipper does. But when it dumps, the material is spread out more. As the dragline worked along, a D8 with a bulldozer blade leveled the material and acted as a pusher if the Terra Cobras needed it. There was also a D8 push cat regularly assigned to the pit.

After being dug and cast by dragline, the material dug very well by Cobras. Heaping loads were the rule. The material got additional mixing as it was loaded and when it was dumped on the fill. The average haul was about 2,500 feet. The Cobras placed their fill material without the aid of any other equipment, laying the dirt down in level 6-inch layers. There was one Galion 102 motor grader on the project, but it very seldom got to the fill. It worked more often on haul roads, keeping them smooth.

Compaction was handled by a D8 and a double set of Gebhard tamping rollers. The material required 12 to 14 passes in order to develop the density required. The standard method of sampling densities was used, and field results very often exceeded laboratory densities; 100 per cent densities were not at all uncommon.

A somewhat unusual scheme for water was used. There was one water tank truck on the project, which was used to sprinkle haul roads and fill material where needed. It got its water from a standpipe outlet on the Marlow pump which pumped the river through the project. A valve near by permitted the driver to take whatever he needed.

The earth-moving phase of the dam also included some miscellaneous embankment bulwark in the reservoir area along the Northern Pacific railroad tracks. This excavation was all short-haul work, taken from near-by borrow pits. It was handled by two D8's with a Wooldridge scraper and LeTourneau Carryall.

Completion of Dickinson Dam so far ahead of schedule will soon add another unit to the ever-increasing number of reservoirs now going to work in the Missouri Basin as a part of the Pick-Sloan Plan.

L. N. McClellan is Chief Engineer of the Bureau of Reclamation, and the project was designed and construction administered under his general supervision. Kenneth F. Vernon at Billings is Regional Director, and Charlie Whipple is Resident Engineer.

For Adler Construction Co. on this phase of the work, supervision was personally exercised by Harold C. Adler, assisted by George Osborn as Project Engineer and M. E. Sparks as General Excavation Foreman.

Safe-Line Clamp Business Sold

National Production Co. has sold its Safe-Line wire-rope clamp business to the recently formed manufacturing and distributing organization National Safe-Line Clamp Co., of which Walter Thorssen is owner. The new firm is located at 11252 Nine Mile Road, Van Dyke, Mich.

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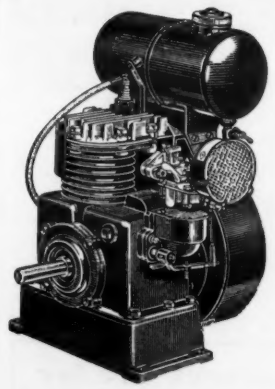

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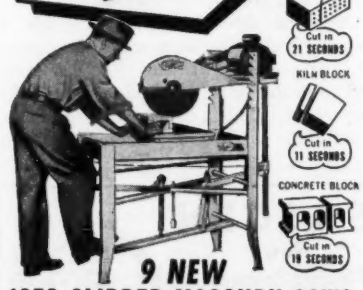

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C. & E. M. Photos
Views in Brown County, S. Dak.: at left, a D7-drawn Carryall and an RD6 with an Allis-Chalmers pull blade work together. Above, a mechanic greases his "Cat".

Higher Standards Lower Road Costs

County Raises Its Standards of Construction in Order to Lower The Cost of Maintenance And Snow Removal

✦ HIGH construction standards on county roads mean a better investment through lowered maintenance and snow-removal costs. In fact, his county would decline to build a 1950 highway to the minimum acceptable standards under Federal Aid: that is the considered opinion of Earl Coyne, County Highway Superintendent of Brown County, whose headquarters office is in the city of Aberdeen, S. Dak. In the 27 years that Coyne has been associated with county highway work, he has come to realize that the only way that highway costs can properly be considered is in the broadest possible sense, ranging far into the future.

Taking long-range factors into consideration, Coyne has already come far toward building an excellent road network in Brown County. Of the 464½ miles, all now are gravel with the exception of 1½ miles. That experimental piece is a bituminous surface treatment, placed on a gravel base. Soon, Coyne believes, his county will do more of that type of construction.

Preliminary survey, plans, and construction engineering on all Federal-Aid Secondary projects are performed by the State Highway Department forces with Federal participation in the cost. Public contract lettings are held monthly in Pierre, the state capital. Robert W. Owens, District 1 Engineer in Aberdeen, has supervision of FAS routes undergoing improvement.

An Agricultural County

Brown County is situated in the northeastern part of the state, with its northerly line abutting the state of North Dakota. It is a rectangular county, 36 x 48 miles in area. The region is primarily agricultural, with crops, dairy cattle, and beef cattle originating here for the nation's markets.

The transportation over the county network of roads, therefore, consists of heavy trucks and passenger cars. It is a friendly, social county, which adds up to a demand for a fine highway system.

Coyne fills that demand with one of South Dakota's most efficient engineering departments. With central headquarters in Aberdeen, Coyne supervises all the design and construction work, including surveys. Maintenance is done by a patrol system, with Brown County divided into 7 regular sections.

So far as topography is concerned, Brown County is generally level land. It slopes gently from north to south. The main streams are the James, Elm, and Maple Rivers. They are all slow, sluggish streams which sometimes flood but never do any erosive damage.

Far back in the beginning of road building, South Dakota designated a

(*Continued on next page*)

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C. & E. M. Photos

Brown County's main shop and administration building (above) is in Aberdeen, S. Dak. Shop Foreman Ed Pantsch (right) looks over some of the heavy V-plow equipment.

Higher Standards Lower Road Costs

(*Continued from preceding page*)

66-foot strip along each section line as a location for highways. Today these general lines are still being used, but the sharp corners have given way to easy curves, and additional strips purchased along the right-of-way have widened that part to permit the new, more modern type of highway construction.

High Standards Followed

Proceeding on a sound basis, Brown County is now engaging in a broad improvement of its highways. Minimum riding-width standards now are 22 feet, with a great deal of 24 and 26-foot construction going in. Construction by contract and by county equipment is under way.

In connection with grade and gravel construction, the Brown County commissioners have so far not authorized extensive bituminous work. It is a foregone conclusion to all concerned, however, that the day is approaching when more of this work will be done. The present sound policy is first to build an adequate gravel surface for all county roads, which has now been done.

The design control used for grade construction is the desirable standard recommended by the South Dakota State Highway Commission for roads carrying an annual average of from 100 to 400 vehicles per day. This will permit the bituminous surface to be built in the future on a safe and adequate road foundation.

The approximate cost today on county projects for a Class A bituminous-surface-treated cover coat over a 4 to 6-inch compacted and stabilized gravel base course is running from $13,000 to $16,000 per mile. The cost of applying built-up armor coat during a 3-year period of construction is under tentative study. Findings will probably be used whenever Brown County decides to build a higher type, dustproof oil road.

FAS and county work under way at this time is all to standards of 24-foot width. As a general rule the roads are being constructed with two answers to serious problems in mind. They are being raised slightly above the surrounding terrain to assist the wind in keeping the snow blown off clean, and they are being shaped and crowned to assist natural drainage as much as possible.

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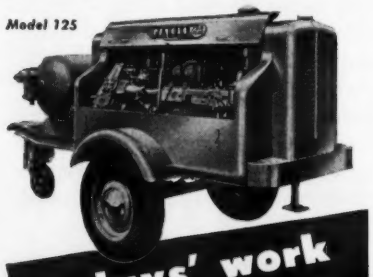

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Maintenance

The 7 maintenance patrols currently consist of sections from 65 to 70 miles long, spaced at strategic towns over the county. Each crew consists of only one man: a patrolman who uses a motor grader. The seven regular motor graders include an Allis-Chalmers AD-3, an Allis-Chalmers AD-4, an Adams 512, three Caterpillar No. 12's, one No. 11, and one old No. 10 which is now used as a stand-by unit.

Routine maintenance consists of blading the gravel to keep it smooth. During dry weather the coarse particles ravel out of the surface, and if they are allowed to stay there, the road gets rough and corrugated. Moreover, if the larger sized particles are allowed to remain there, traffic grinds them to bits and much of the expensive material blows away as dust.

Summer maintenance, then, is aimed at saving these coarse particles by windrowing them over to the side. After each rain, another grading puts them back on the road, where they mix with fines and again become stabilized. Late fall maintenance, usually done after rains, is always aimed at getting the best stabilization combined with a good crown to let winter moisture run off as much as possible.

In a few stubborn cases where too many of the fines blew away, Coyne's men have hauled good yellow clay out and added it as a binder. Blade-mixed with the rock particles, it has proved satisfactory.

Brown County owns a rather old portable rock screening and crushing plant, which always works all winter long. This takes care of a few key men, and at the same time gets out stockpiles of gravel for the summer ahead. Brown County, as well as many other counties in the west, has changed over from 1-inch maximum size gravel to ¾-inch maximum aggregate. The smaller aggregate seems to have better stability, it will not ravel out as easily, and automobiles can move 55 miles an hour without shoving a large rock through a tire.

Coyne and his men have devised a master maintenance plan. It is quite simple. The plan simply sets up a maintenance priority for each section. When the foremen or patrolmen follow this plan, it acts to service the principal county roads between towns first. Next come the roads with the next-highest traffic counts, and so on down the line.

This plan is always followed during winter snowstorms. Each patrolman has a heavy V-plow and wing for his motor grader. In addition, there is an Oshkosh and a FWD truck at the Aberdeen headquarters, each machine equipped with a V-plow and wing.

The motor graders formerly were centrally located at Aberdeen, but winter snowstorms made it necessary for them to stay scattered out where they could work according to plan. Each headquarters shed has fuel, small tools, and whatever the patrolman normally will need. If he needs anything else, or if he notices some kind of unusual condition which requires help, a call to Aberdeen brings extra men on the run.

There have been a few occasions when the snow got beyond the capacity of motor graders and truck-mounted V's. In those cases Coyne has been able to borrow a rotary from the State Highway Commission, whose district headquarters and yard are located only 200 feet away from his place.

Early spring maintenance work is currently fighting a hard, discouraging problem. Both Minnesota and South Dakota now have rigid weight control limits for the short period in early spring when the frost leaves the ground. Moreover, those weight limits are enforced. What happens is that the heavy loads promptly move over to the county roads.

It is quite a problem, and so far there has been no real solution. The frost usually leaves in about two weeks, but it can come any time over a 2-month period. When it does come, it coincides unfortunately with the season when farmers want to haul seed, crops, and other heavy loads. Things are on the way to market. The trucks which do the damage are not out joy-riding, and yet they do damage which requires months to repair.

Coyne has succeeded in selling the highway system to the people as "your roads, you paid for them" to the extent that some of the most alert load enforcement now comes from the public. That is a step in the right direction. It is not unusual now for some farmer to call in and give the full particulars about an overweight load passing his place. He usually winds up his complaint by saying, "Now I don't want to tell tales, but by gosh all the rest of us farmers are staying off this road for a couple weeks and he can too."

Coyne invariably thanks his source of information and gets after the of-

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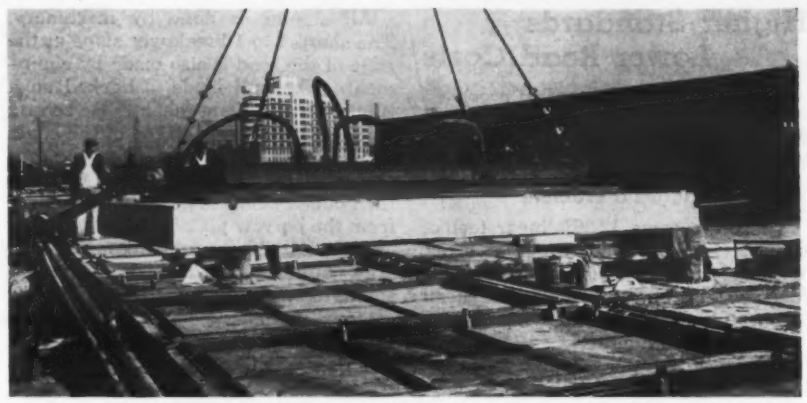

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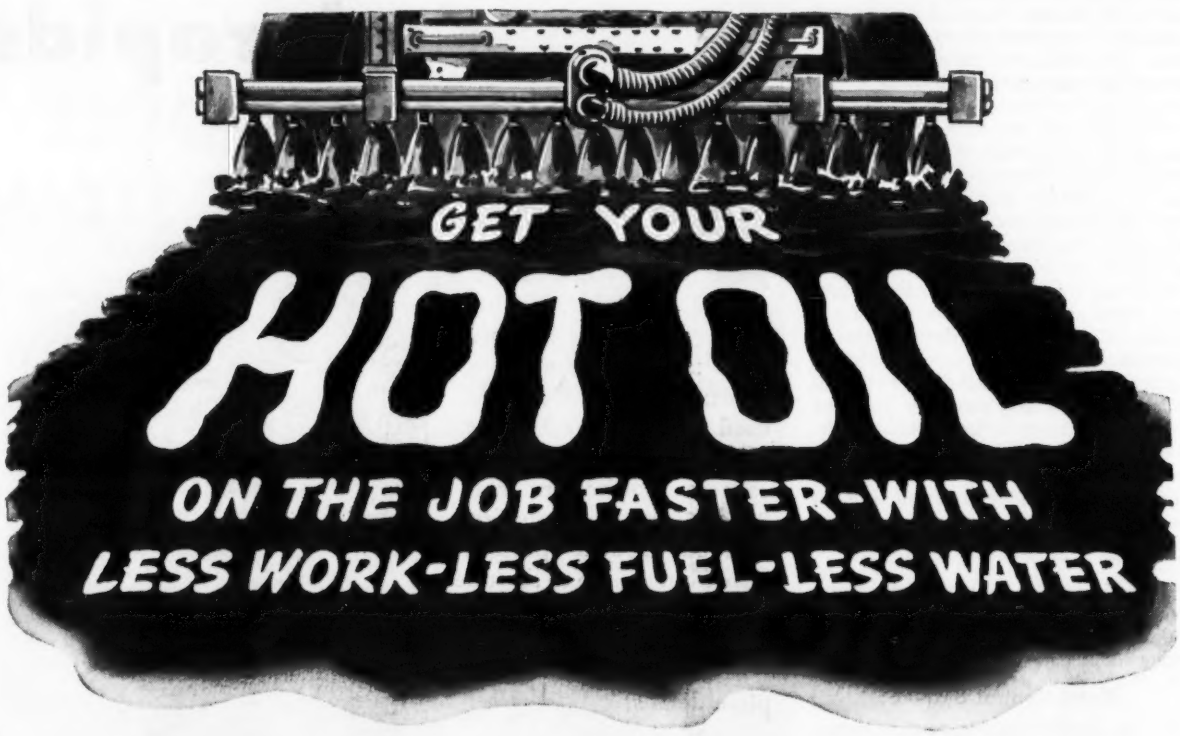

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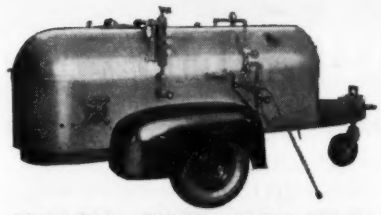

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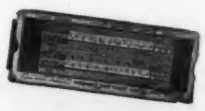

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Higher Standards Lower Road Costs

(*Continued from preceding page*)

fender. He is slowly making some progress.

Bridges a Problem

There are some 12,267 linear feet of bridges, totaling about 375 structures. With the exception of a fine new 242-foot concrete structure near Hecla, all are a problem in some varying degree.

Last year's annual report said in part: "The present status of county bridges is alarming, and requires serious study. New construction of a large number of structures both on and off the county highway system probably is the answer to the problem. The present high cost of concrete and steel, together with a method of financing the projects, presents a difficult situation. The old 6 and 10-ton safe-load posting of bridges does not stop the present use of existing structures with loads exceeding the limit up to 400 per cent. Many counties have had bridge failures resulting in damage claims in court and judgement obtained. State laws enabling counties to carry insurance against damages is an approach to the subject, but not the answer.

"Consideration should be given to replacement of all bridges located on the county routes, immediately, with Federal participation, that do not come up to the H-15 safe-load standard. Important township roads with inadequate bridges should also be considered.

"A few of the 8-ton pony truss bridges have been shortened up by driving a cluster of piles under the transverse I-beams. Maintenance care in tightening, repairing, and making more rigid to prolong the life and safety of many of the old structures is now being done. About 50 per cent of the structures are from 30 to 50 years old. About 40 per cent of the remainder are from 10 to 30 years old, and the latter group of bridges were designed for H-10 loading capacity."

Coyne is now recommending a comprehensive physical inspection of every bridge, to be followed by a 5-year bridge construction program.

Weed Control Started

Brown County is doing routine mowing as a part of maintenance, and is also experimenting with chemical weed killers. Coyne would especially like to be able to sterilize the ground around bridge abutments, guardrails, and so on.

The noxious weeds he is after include small willows, creeping jenny, leafy spurge, Canada thistle, perennial sow thistle, perennial pepper grass, Russian knapweed, horse nettle, and quack grass. Leafy spurge is the worst offender. Some good results have been obtained with 2,4D. This chemical has successfully killed willows in the low bottomlands around the James River when for years cutting by hand labor was costly and ineffective.

The county doesn't know all the answers on this phase of maintenance as yet, but further experimenting should supply them.

Have Construction Outfit

Brown County has its own construction outfit, which moves around the system building new construction jobs. The equipment fleet includes two Caterpillar D7's with LeTourneau Carryalls, a D7 with a dozer blade, a new No. 12 Caterpillar motor grader, an RD8 and an Allis-Chalmers pull blade, and a Caterpillar elevating grader.

Staffed by a few experienced key men, this equipment fleet performs grading construction rapidly and economically. It does not try to compete with the contractors in that part of the state, but the crew does do work which the contractors might envy.

All sloping is done by machinery. The sharp 4 to 1 breakover slope at the edge of the road is also made by equipment. The pull blade is hooked on a tractor by a long chain. A second machine rides along on top of the bank, hooked by a chain or cable to the rear end of the pull grader. The machine then cuts a beautiful, even slope. Earth from the borrow pit is brought in to the center to build the embankment. The crew builds roads to the established standard after a survey party sets center-line stakes.

Finished work being done this year is up several feet above the flat country. The cross section shows no abrupt ditch, only a broad 10-foot bottom section between the 4 to 1 side and 5 to 1 back slopes. There is plenty of snow storage room along these roads, and it will be rare when they ever have to be plowed. This design is expected to be adequate for many years.

The construction outfit is also doing some miscellaneous earth work in connection with alignment changes, flattening of slopes, and easing of curves.

Main Shop Headquarters

Central supervision, stores, and equipment repair is the function of a headquarters shop, situated on the east side of the city of Aberdeen. The 80 x 160-foot concrete and wood building was built back in 1940 by the WPA. It contains Coyne's office, the stockroom, and equipment repair machines and tools.

Equipment repair is generally geared to the replacement of factory parts, although there is also a lathe in the shop. All major repairs are made in this building. Field repairs are limited to routine "monkey wrench" work.

The surveyors also work out of here. There is one three-man party, and they work wherever new construction is under way. By using the Aberdeen shop as a central meeting place to work from, Coyne keeps all the details at his fingertips.

It pays off, too. In 1947 it started snowing the morning of November 14, continuing almost without let-up until April 1, 1948. The shop never closed during that time. Men stayed with their equipment, battled the blizzards, and kept the highways open. Without

(*Concluded on next page*)

HERE'S BIG VOLUME AGGREGAT
Cedarapids UNITIZE

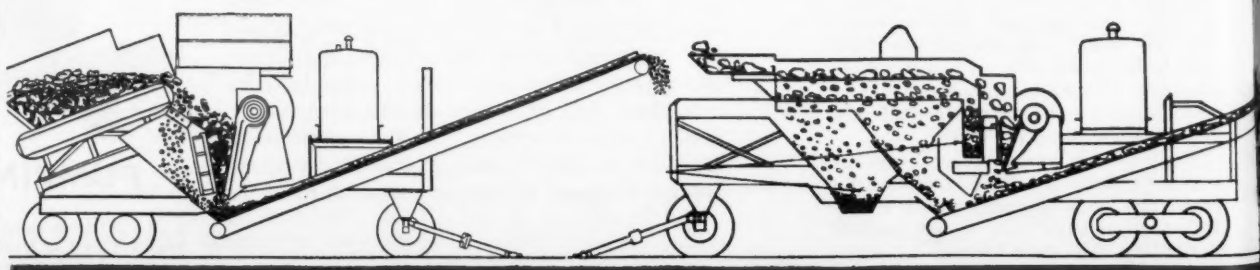
YOU get big volume production for big volume profit when you use the Cedarapids Unitized Plant! With these four flexible basic units combined in a dozen different ways, or used alone, you can meet *any* quarry condition, *any* capacity requirement from 25 to 250 tons per hour, *any* finished product specification from rip rap to agstone . . . with big volume efficiency and economy. Write for Bulletin UNIT-2 for complete details.

FOUR BASIC UNITS MEET EVERY AGGREGATE SP

1 PORTABLE PRIMARY CRUSHING UNITS handle the crushing of raw material, reducing it to a size readily handled by the scalping unit or secondary. Easily moved to meet every job requirement. Available in a size to fit your needs.

2 SCALPING UNITS remove excess fines and crush the material to reduce the circulating load on the secondary. They can also be used for making specialized products, and where oversize is not too large, they can be used for primary crushing. Choice of sizes.

3



Cedarapids Built by IOWA

THE IOWA LINE *of Material Handling Equipment Includes:*
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE AND GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS •

good supervision and a plan to work from, it could never have been accomplished.

Brown County is one more example of a fine county engineering organization, coupled with a small group of long-time employees, who are doing their part to take the stigma off the words "county roads" and make them a source of pride to all.

Chain-Saw Sharpener

A new heavy-duty hand grinder for sharpening chain saws has been engineered by The Dumore Co., Racine, Wis. Equipped with a 1/10-hp motor, the sharpener runs on 115 volts, ac or dc. The tool is designed to provide fast sharpening for operators who have power at headquarters, or who have mobile equipment powered by a generator.

The Dumore hand grinder for sharpening chain saws has a 1/10-hp motor and runs on 115 volts, ac or dc.

The unit features a lightweight aluminum casing, forced-fan cooling, and a handy operating switch; it is balanced for hand grasp to make easy, continuous production possible without operator fatigue. The tool is furnished with four grinding wheels.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 129.

Jaeger Names Managers

H. A. Kindler has moved up from Manager of the Air Compressor Division of The Jaeger Machine Co. to District Manager in the five-state area of Illinois, Iowa, Missouri, Nebraska, and Kansas. Dale D. Murray, who takes his place in the Air Compressor Division, advances from the position of western representative in San Francisco.

New 1950 Trucks

The new 1950 truck line built by the Ford Division, Ford Motor Co., Dearborn, Mich., offers more than 175 models and represents the largest selection of trucks in Ford history. Featured in the 1950 trucks are 21 engineering, design, and manufacturing advancements, according to the company.

The 1950 models are powered by the 226-cubic-inch 95-hp 6-cylinder Ford truck engine; the 239-cubic-inch 100-hp V-8; the 337-cubic-inch 145-hp V-8; and a recently developed 254-cubic-inch 110-hp six. This engine used in the F-6 series is the most powerful six-cylinder engine ever built by Ford. A new four-speed synchro-silent transmission that eliminates double clutching is standard equipment on the 254. An extra-heavy-duty clutch is included.

Features of the new F-7 models include 15 x 15-inch rear brakes with aluminum shoes; they have a double cylinder and self-energizing hydraulic actuation. Full air brakes of the two-shoe type are now available for F-8 series models. Rear brake size is 16½ x 5½ inches.

Filling the special requirements of many truck users is the 176-inch wheelbase now available on the F-5 and F-6 series for bodies in the 14-foot range. In the F-7 and F-8 series there is now a 147-inch-wheelbase model for tractors and dump trucks and a 17-inch wheelbase for 14-foot bodies.

The F-8 now has a single-speed rear axle as standard equipment with a two-speed axle also available. The F-7 and F-8 series have a double channel frame for adequate support of heavy loads. Gross vehicle weight ratings for the 1950 line range from 4,700 pounds in the F-1 to 22,000 pounds in the F-8 straight truck and 39,000 pounds when used with tractor and trailer.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 80.

Rubber-Products Catalog

A series of loose-leaf inserts, combined to form an attractive catalog of mechanical rubber products, has recently been issued by the Continental Rubber Works, Erie, Pa. Individual sections are devoted to rubber hose, clothing, couplings, diaphragms, and friction tape.

Specifications are given on four different types of air hose for construction use. Also presented are the Vitalic jet hose for use on dredges, sand suckers, and pile-driving rigs; the Liberty discharge hose for use on the end of centrifugal or diaphragm pumps; Tribune water hose, specially designed for industrial and contracting operations; pile-driving hose available in from 3 to 9 ply; and suction hose for work on excavation, drainage, and general contracting. All features and applications of these lines are fully treated in the catalog sheets.

Other products manufactured by the company and of interest to contractors are waterproof all-purpose raincoats, jackets, pants, and boots. A full line of hose connections and fittings is also illustrated.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 83.

Dewey & Almy Abroad

The Dewey & Almy Chemical Co. is to open a plant in Epernon, near Paris, France, to manufacture, among other things, products for improving the quality of concrete in construction work. Henry Wasmer, the company's Managing Director in London, will supervise operations, which are expected to begin this summer.

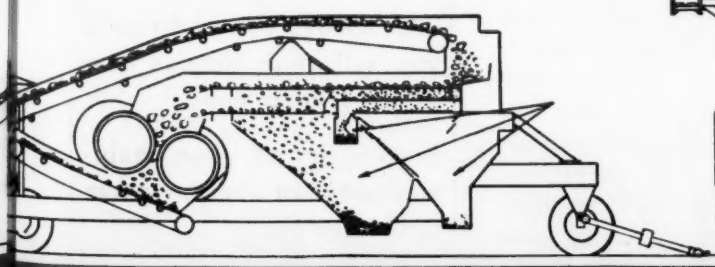
The company's Naples plant, damaged during the war, has been rebuilt and is now in operation.

PRODUCTION AT ITS BEST—
all purpose PLANTS

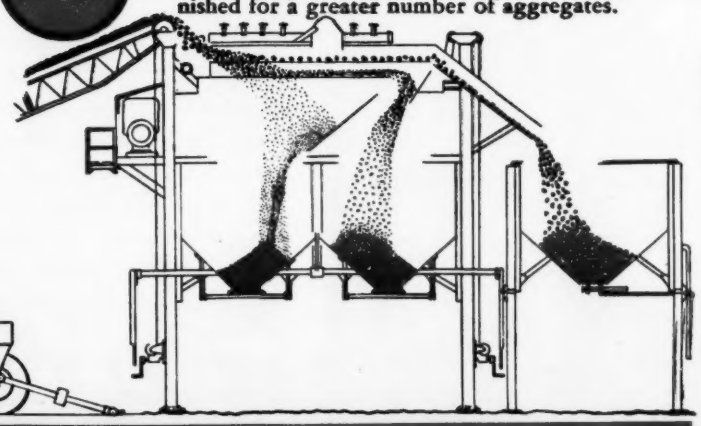
MAXIMUM FLEXIBILITY
•
MAXIMUM PRODUCTION
•
MAXIMUM ECONOMY
•

SPECIFICATION—ANY QUANTITY REQUIREMENT

3 SECONDARY CRUSHING UNITS available with four types of crushers—roll, twin jaw, Symons Cone and hammermill—interchangeable to suit your finished product requirements. A complete crushing and screening plant in itself, the Secondary is the heart of the Unitized Plant. The other matched units can be added later.



4 WET OR DRY SCREENING UNITS consist of a 2-compartment bin and double-deck screen. Washing attachments can be added for washed aggregate. Additional bins can be furnished for a greater number of aggregates.



IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

The Hall-Holmes all-position brush cutter, which has an 18-foot horizontal reach and a 19-foot vertical reach from roadway shoulders.

An All-Position Brush-Cutting Unit

A machine that will cut brush along roadways regardless of roadside contours or obstructions—in other words, down over the side of cut, overhead banks, over guardrails, etc.—is available from Hall Machine & Iron Works, Inc., Sedro Woolley, Wash. Having a horizontal reach of 18 feet and a 19-foot vertical reach from roadway shoulders, the new unit will cut brush up to 2 inches in diameter at regular cutting speeds. At reduced cutting speeds it can handle 3½-inch brush, according to the company. Average cutting is usually at about 1½ to 3 mph, the speed depending on the size, density, and type of growth. Grass and weeds can be cut, as well as brush, without changing blades.

The Hall-Holmes brush cutter is a fully hydraulic one-man-controlled unit. All controls are mounted in the cab within easy reach of the operator. By manipulation of the finger-tip controls, the operator can cut at any angle or height desired. The cutter unit is mounted on a hydraulically operated turntable which swings the bar to cutting position. Hydraulic cylinders extend the reach of the carriage and boom to the required reach of the cutting bar. The cutting bar is operated by a direct connected hydraulic oil motor at high pressure, thus producing a shearing rather than a clipping action on the bar. The design and construction of the machine is simplified by the use of all-hydraulic drives on the cutter unit. A safety release allows flexibility if unseen obstacles are encountered.

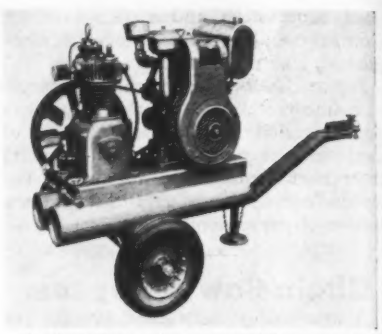
The engine is direct connected to a precision-built double take-off gear box, which in turn drives two rotary-type hydraulic pumps. One pump is used for all controls, while the other drives the cutting-bar hydraulic oil motor. With this type of installation, any or all controls can be used without affecting the speed or shearing power of the cutter bar.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 57.

Portable Compressor

A new line of trailer-mounted portable compressors has been developed by Gardner-Denver Co., Quincy, Ill. Designed especially for operating small air tools on miscellaneous service jobs, these new compressor units are said to have ample capacity for operating chipping hammers, light paving breakers, spaders, tampers, and similar tools.

The units are furnished complete—the air-cooled compressor, with V-belt drive to gasoline engine, mounted on a sturdy pipe tank-type base. The compressor is equipped with semi-pneumatic rubber-tired roller-bearing wheels, drawbar, trailer hitch, and stabilizer leg. Three sizes are available, and all units are balanced for one-man handling.

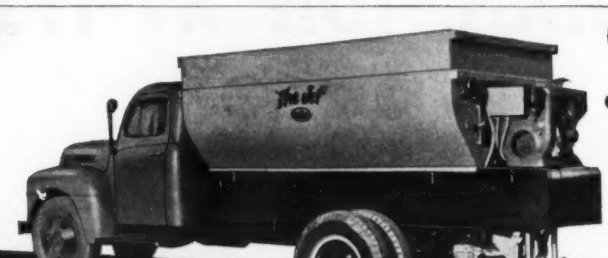


Gardner-Denver's new portable compressors operate small air tools, chipping hammers, light paving breakers, spiders, tampers, and similar equipment.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 13.

it's "The Jet" with DC-6 CONTROL
DIRECT CAB

CAPACITY 7 CUBIC YDS.



FOR SEAL-COATING . . . ICE AND SLEET CONTROL

Good Roads MACHINERY

WIDTH OF SPREAD:
FROM 12 TO 28 FT. FOR SEAL-COATING.
FROM 12 TO 60 FT. FOR ICE AND SLEET CONTROL.

DC-6 CONTROL - - - - - - - - -
Ignition, Starter, Flasher Lights, Clutch, Choke, and Throttle are fingertip controlled from the truck cab. Fits any truck.

STEEL BELT CONVEYOR - - - - -
The controlled intermittent action shakes materials down through the wide throat onto the twin spinner discs.

UMBRELLA SPREAD - - - - - - -
Material is confined to a low horizontal plane thereby protecting traffic.

WATERPROOF, AIR-COOLED MOTOR - -
A powerful unit capable of driving the twin spinners at a speed of 2400 r.p.m.'s.

SPREADS ANY MATERIAL:
SAND
GRAVEL
LIME
SALT
CINDERS
CALCIUM-CHLORIDE
ANY OTHER DESIRED

Contact your Good Roads Dealer or factory for further detailed information or a demonstration

GOOD ROADS MACHINERY CORP. - - - - - - - - - - MINERVA, OHIO

GETMAN'S *New* SCOOT-CRETE

There are countless applications for the GETMAN SCOOT-CRETE, the most modern, efficient and economical way of handling bulk materials. Has maneuverability with caster steering, large heavy-duty tires for traction to move a load over any surface. Built rugged for day in and day out service, and when it's time to stop, the SCOOT-CRETE has brakes that HOLD. So if you want to drastically cut cost in materials handling, go the GETMAN way—see SCOOT-CRETE today!

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and
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are always ready to help you sell your surplus new or used equipment.

Send a list of your equipment now to appear in our next issue to:

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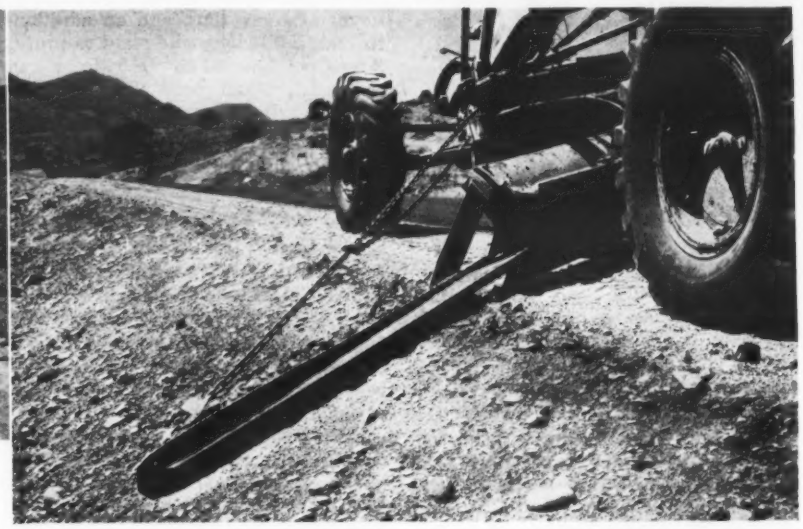

C. & E. M. Photos

On Nevada State Route 22, a Caterpillar No. 12 motor grader equipped with a special blade extension dresses fill slopes. Silver State Construction Co. developed the extension to speed work on slopes greater than 1½ to 1.

Blade Extension Dresses Slopes

Contractor Shop-Builds Device From Bulldozer Blade to Dress Slopes With Much Less Effort

✦ WHEN contractors are puzzled by a problem on construction work, they invariably run to their heavy-equipment repair shop, gaze hard at the master mechanic, and say, "Bill, make up something like this and have it ready by tomorrow morning!"

Such a device was made by the Fallon, Nev., firm of Silver State Construction Co., to speed the tedious dressing of embankment and side slopes greater than 1½ to 1. Standard equipment can be used on the flatter slopes. The device consists of a heavy piece of sharp steel, cut from the bottom edge of a discarded bulldozer blade, and weighted at the outside corner with an additional piece of heavy metal.

The extension is bolted to the edge of a motor-grader moldboard, and is steadied by a heavy chain, leading from the grader frame to the outer edge of the extension. A winch is mounted on top of the grader frame just back of the scarifier mount, and the scarifier disconnected and the winch hooked up to the scarifier drive. This permits control of the angle of the blade from the cab both above and below the grade of the roadway, as the scarifier drive makes it possible to operate the winch in reverse. With the device fastened to the motor-grader blade, the machine can stay up on the highway and reach far down or up a slope to do a fast, clean job of dressing. Material loosened by the operation falls down where it can be removed more easily.

Good records have been made by the shop-built extension blade. As much as 6 miles of dressing has been done on both sides of the highway in a shift, previous to the final acceptance of the work.

When the Caterpillar No. 12 motor grader shown in the accompanying illustrations was busy shaping fill and cut slopes steeper than 1½ to 1 on a new 12-mile secondary section the company recently completed for the Carson City office of the Bureau of Public Roads. The work was located on Nevada State Route 22, through the public lands of Toiyabe National Forest, and thus was done under direct supervision of BPR rather than through the usual State Highway Department channels.

Mechanization of many of the minor contract items of this kind, formerly done by hand labor, has done much when applied by alert contractors to lower general highway construction costs over the nation.

TARPS! TARPS! TARPS!

Finest quality, durable, long life tarps at lowest prices. 12.41 Oz., waterproof, mildewproof, entirely double sewn tarpaulins.

Any size—Immediate Delivery

Dealers and Distributors wanted in select territories. *Write, Phone or Wire.*

M. Mauritzon & Company
(Established 1914)
407 N. Milwaukee Avenue, Chicago, Illinois
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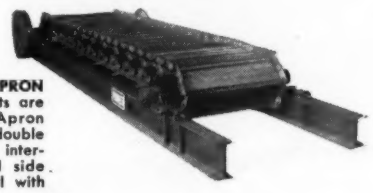
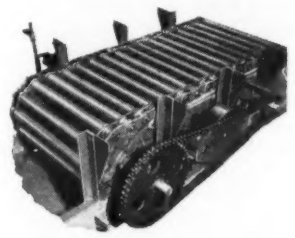


ORO MANGANESE STEEL APRON FEEDERS. All wearing parts are Oro-Supermang Steel. Apron consists of Oro-Supermang double beaded, overlapping and interlocking pans with vertical side flanges. Pans cast integral with driving links.



TRAVELING GRIZZLY FEEDER. A heavy duty feeder, by-passes dirt or fines. Consists of a continuous track of 4" diameter tubular steel bars spaced 2½" apart. Driving mechanism with speed reduction. Clutch permits one man control.

Pays for itself every 6 months!

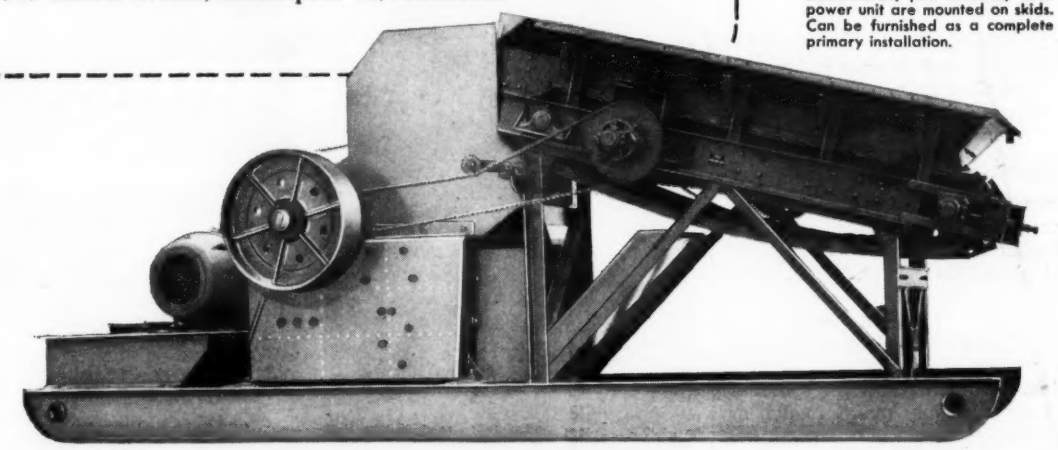
If you've ever pried a wedged rock or tried to clean out a choked crusher, you know how important a good feeder can be. "Most valuable piece of equipment in my plant . . . saves its cost twice a year . . . insures steady production". . . that's the opinion of many experienced operators.

And they're right too. Without regulated feed, crushers are overloaded one minute . . . empty the next. Result—frequent clogging, idle trucks, lower production while a man with a manganese back cleans out the hopper or crusher.

You'll agree, we're sure, that a feeder can be *the most important single unit in many plants.* To fill your most exacting requirements, Pioneer builds three types of feeders for heavy work—Apron, Pioneer-Oro, and Traveling Grizzly—in many sizes. Just check the coupon below for complete details. PIONEER ENGINEERING WORKS, 1515 Central Avenue, Minneapolis 13, Minnesota.

APRON FEEDERS. ½" forged steel pans rigidly supported on wide rollers. Overlapping forged steel pans and sideboards provide a continuous path for material . . . reduce spillage.

Illustrated below is a 170 Series Plant. An apron feeder with flared sideboards, jaw crusher, and power unit are mounted on skids. Can be furnished as a complete primary installation.



BUY BOTH!
Higher Output, Lower Upkeep!

Pioneer *Continuflo* **EQUIPMENT**

Mail coupon today! Please send me more information on the following:

PIONEER ENGINEERING WORKS
1515 Central Ave., Minneapolis 13, Minn.

- ☐ APRON FEEDERS
- ☐ ORO FEEDERS (HEAVY DUTY)
- ☐ TRAVELING GRIZZLY FEEDERS
- ☐ MECHANICAL FEEDERS
- ☐ CONTINUFLO CONVEYORS
- ☐ BUZZER SCREENS (LIGHT DUTY)
- ☐ VIBRATING SCREENS
- ☐ REVOLVING SCREENS
- ☐ ROLL CRUSHERS
- ☐ JAW CRUSHERS
- ☐ GRAVEL PLANTS
- ☐ ROCK PLANTS
- ☐ WASHING PLANTS
- ☐ BITUMINOUS PLANTS
- ☐ ROCK TOWERS

Name_____

Company_____

Address_____

City_____ State_____

Cedarapids has added this new low-cost crushing and screening plant to its line — the Hawkeye Series, capacity 50 to 75 tph.

New Line of Crushing And Screening Plants

Known as the Hawkeye Series, the new Cedarapids crushing and screening plants made by Iowa Mfg. Co., 916 N. 16th St., Cedar Rapids, Iowa, are designed to produce gravel for road maintenance and small concrete-structure jobs.

The lightweight Hawkeye is completely portable, with nothing to set up or take down when transporting, and can be moved with the job to the nearest gravel bank to eliminate high hauling costs. Depending on local conditions and specifications required, the plant produces between 50 and 75 tons of accurately sized material per hour, according to Iowa.

It is an all-in-one unit made up of standard Cedarapids parts consisting of hopper, feeder, and feed conveyor; Cedarapids horizontal vibrating screen; bucket elevator and return conveyor; sand and delivery conveyors; and a choice of four sizes of either plain or roller-bearing jaw crushers, 10 x 16, 10 x 20, 10 x 24, or a 12 x 16 twin jaw crusher.

Further information may be secured from the company by requesting Bulletin Hawk-1. Or use the Request Card at page 16. Circle No. 113.

Holes in Plywood Covered by Disks

A new, quick, and economical way of covering a hole not needed in plywood forms has been introduced by Troiel Companies, Inc., 839 Channing Way, Berkeley 2, Calif. The covers are about the size of a silver dollar and are applied with an inexpensive setting tool. Stamped from light-gage steel, they have six perforations with digging edges bent perpendicular to the cover for setting in the wood.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 31.

Broadside on Spreader

A broadside on the Champion Handy spreader has recently been issued by the Good Roads Machinery Corp., 8601 Second Ave., Detroit 2, Mich. This spreader, the circular points out, is available in 8, 9, 10, 11, and 12-foot widths. It has a truck hitch so designed that its variety of vertical and horizontal adjustments will allow the spreader to be used with any make, model, or size of dump truck.

All operating and control features of the spreader are presented in the catalog, including the spare wheel and the inset weatherproof toolbox. A safety platform for shovelers and an agitator assembly for distributing wet materials are available extras for the Champion Handy.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 66.

Perlite to Triple Capacity

Perlite Mfg. Co., Carnegie, Pa., has embarked on a $100,000 modernization program to triple its production of the lightweight aggregate Perlite. New conveyor systems, bins, and an additional furnace will enable the plant to process 2 tons per hour of raw Perlite into the finished product used in plaster and other building materials.

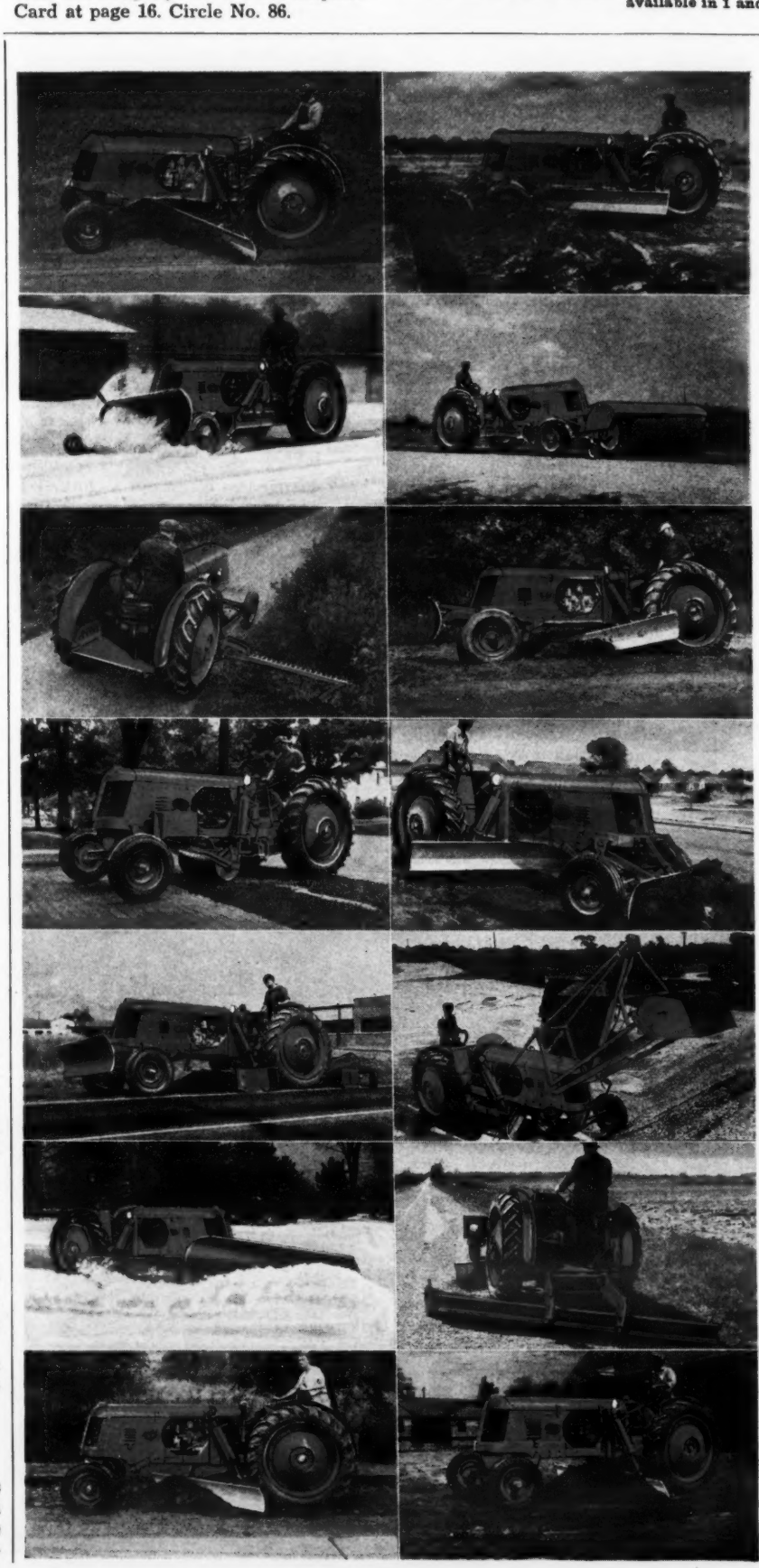
A Three-Way Crane Will Do Many Jobs

A new 3-way Hydro-Crane designed for a wide range of uses is now manufactured by the Stratton Equipment Co., Hanna Bldg., Cleveland 15, Ohio. Engineered for work in shops, on truck platforms, and on highways, it may be easily and quickly adapted for each specific requirement.

The Stratton unit is hydraulically operated from the power take-off of the truck. Finger-tip control raises or lowers the crane to the exact level desired. The unit is available in a 1-ton and a 2-ton model.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 86.

Removing engines is one of many tasks the new Stratton Hydro-Crane can do. It is available in 1 and 2-ton models.



Some of the MORE

Does Many Jobs .... BIG JOBS

The HUBER Maintainer costs only ONE-THIRD the price of a big motor grader, yet it does ALL of your grader maintenance work.

It outperforms many machines that are larger, heavier, more costly, slower, more expensive to operate, more limited in use. For proof of these statements, see a demonstration.

The HUBER Maintainer is backed by a dozen years of experience in the field on federal, state, county, municipal, township, airport, cemetery, industrial and contract work.

It does all of grader maintenance work . . .

PLUS

. . . these important jobs, with attachments:

BERM LEVELING
ROAD PLANING
BULLDOZING
LIFT LOADING
SNOW PLOWING
HIGHWAY MOWING
BROOM WORK
PATCH ROLLING

HUBER M

Marion,

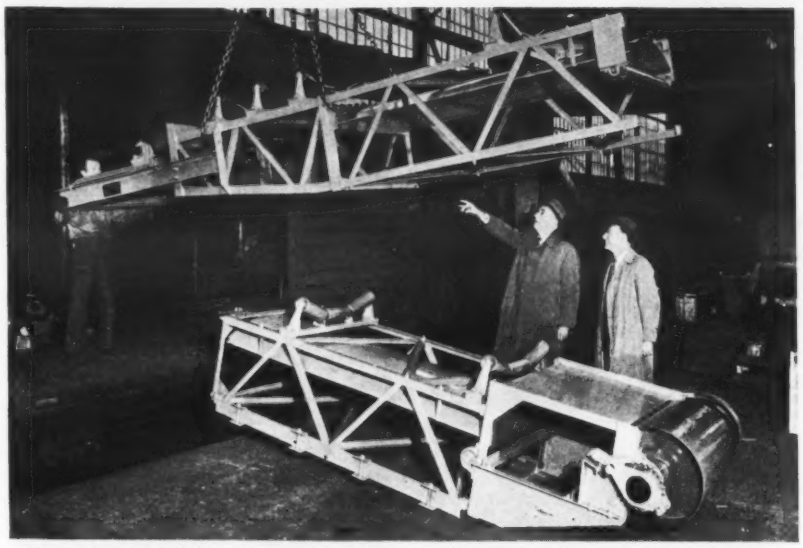
A Packaged Conveyor

The modern industrial trend toward packaging continues in the heavy belt-conveying industry with the introduction of a sectional belt conveyor that can be shipped as a package and installed in the field without the help of trained technicians in about one-fourth the time required for a conventional type of conveyor, according to Hewitt-Robins, Inc., 370 Lexington Ave., New York 17, N. Y.

The Hewitt-Robins sectional conveyor, which comes in short lengths for quick assembling, is available in sections of 6½, 15½, 18½, 21½, and 24 feet. These sections can be bolted together, according to the needs of the job, at special joints designed to facilitate assembling and assure correct alignment.

Primarily for small-scale operations, the conveyor can carry aggregates at 300 tons an hour, according to the manufacturer. First installation of the Robins sectional conveyor has been made at the concrete-block plant of the East Coast Lumber Terminal, Farmingdale, Long Island, N. Y., where twin conveyors handle sand and gravel on 24-inch 4-ply self-aligning Ajax belts at a rate of 300 feet per minute.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 119.



The first Hewitt-Robins sectional conveyor was installed at the sand and gravel plant of the East Coast Lumber Terminal, Farmingdale, Long Island, N. Y. Here installation is supervised by H-W's Vice President D. H. McGuinness, center, and Shop Superintendent George Cattell, right.

reasons a HUBER gives you WORK for your MONEY!

MANY FEATURES

42½ H. P. —More power than many graders. More power, by far, than in ordinary maintainers. Plenty of reserve for the toughest jobs.

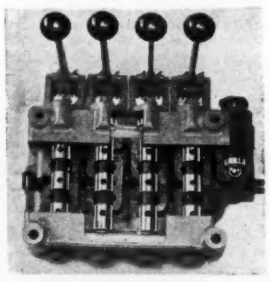
OVER 6,000 LBS.—The HUBER Maintainer weighs over 6000 lbs. with solution in the rear tires. Enough weight for most grader requirements . . . enough for all maintenance work.

BLADE IS PUSHED—Owners credit HUBER's blade-pushing design for a THIRD MORE WORK than conventional pulled blades would produce. Power is transmitted directly from the driving wheels to the moldboard.

COMPARE the HUBER with ANY grader or maintainer on the basis of horsepower, cost, proven dependability, versatility and long range economy.

HYDRAULIC CONTROLS

These hydraulic valves control the raising, lowering and ANGLING of the blade and ALL MOVEMENTS of the versatile attachments. Conveniently grouped finger-tip controls are smooth operating and quick acting. Special steel tubing is used to convey oil to cylinders except at points where the flexibility of hose is required.



Makes Budgets Go Farther

The HUBER Maintainer is easy on budgets, both in the initial cost and in operating costs. You can buy TWO HUBER Maintainers and pay their operating expenses for a year for the price of one large motor grader.

There's a HUBER Distributor near you—Call him today or write to the factory.

Some of the jobs **HUBER** *Maintainers are doing*

GOVERNMENTS—Care of highways, secondary roads and lands in national parks, reservations, etc.

STATES—Many kinds of highway grading and maintenance work.

COUNTIES—Every-month care of highways and secondary roads.

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TOWNSHIPS—The all-around grading and maintenance machine for township roads.

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CEMETERIES—Every-month care of drives, mowing, developing new grounds, snow removal, patching, etc.

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LOGGING—Grading and maintaining logging roads and grounds.

INDUSTRIES—Care of industrial roadways and grounds.

MINES—Care of roadways; sweeping coal veins before removal.

ESTATES, RANCHES—Care of roadways and grounds.

RACE TRACKS—Care of tracks and surrounding grounds.

CONTRACTORS—Performs many different jobs in all kinds of contract work.

M FG. CO. | *Manufacturers of HUBER Maintainers, HUBER Tandem and 3-Wheel Rollers and HUBER Graders*

n, Ohio

Truck Line for 1950

Improvement in road performance through increased engine power, plus advancements for the added comfort and safety of the driver, feature the new 1950 line of trucks manufactured by the Chevrolet Motor Division, General Motors Bldg., Detroit 2, Mich.

With a wide variety of models for all types of hauling jobs, the Chevrolet line comprises 20 series on 9 wheelbases. Gross vehicle weights of the trucks range from 4,100 to 16,000 pounds. Horsepower of Chevrolet's two valve-in-head engines — the Thrift-Master for light and medium-duty trucks and the Load-Master for heavy-duty units — has been stepped up to give greater power for all usable road speeds.

Chevrolet's Load-Master engine now produces 105 hp while the Thrift-Master develops 92 hp. Both engines retain their basic design. Increased horsepower in the 105 Load-Master was accomplished through larger inlet, exhaust, and manifold passages and new Power-Jet carburetors for smoother and quicker response to the accelerator.

Better riding qualities of the 1950 trucks result from improved shock absorbers for Series 3000, heavier front springs for cab-over-engine models in Series 5400 and 5700, and optional auxiliary rear springs for medium-duty Series 3800 units. Also new are seat cushions for all cabs increasing the seat width to 56 inches, new steering knuckles and larger spindle diameter on front axles for heavier hauling operations, and a larger Hydrovac power brake for heavy-duty units.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 116.

Tractor Service Manual

A 220-page service manual featuring the Allis-Chalmers HD-5 crawler has been released by the Tractor Division of the Allis-Chalmers Mfg. Co., Box 512, Milwaukee 1, Wis. Instructions cover proper operation, maintenance, etc.

The service book is separated into twenty-three sections. It includes a general description of the tractor, complete specifications, a detailed illustration of the various assemblies of the machine, as well as instructions for proper adjustments and repairs when rebuilding these assemblies. Where special tools are required in making repairs, their application and use are illustrated. Maintenance instructions, trouble-shooting information, fits, and tolerances are also covered.

Copies of this new HD-5 tractor service manual can be obtained for $3.00 each from any Allis-Chalmers industrial dealer or from the company itself.

Falk Corp. Appointments

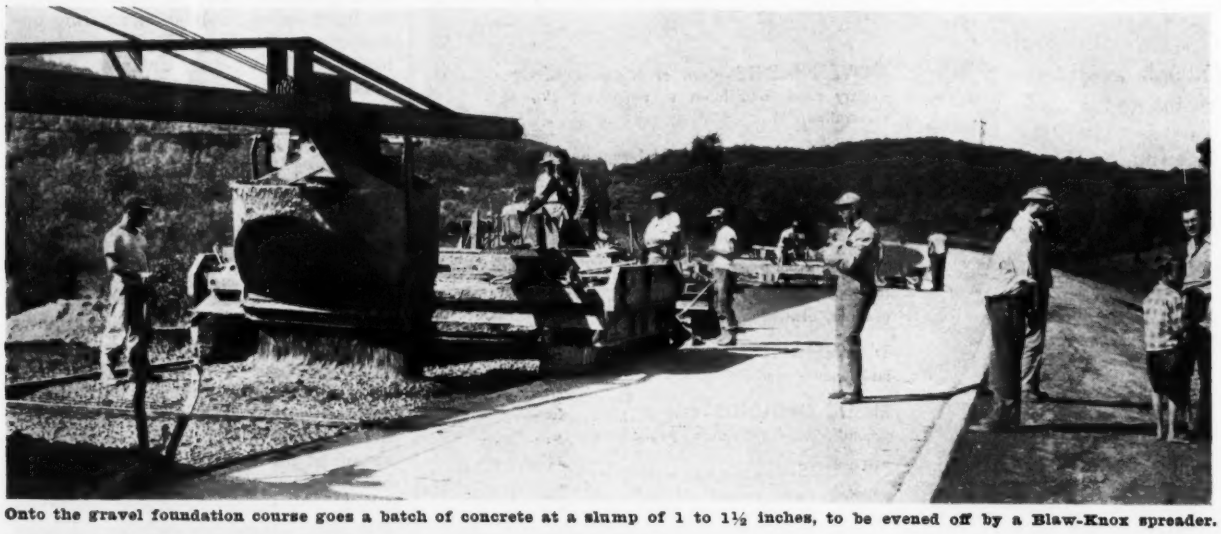
Arthur L. Larson was recently appointed Assistant to the Sales Manager and Manager of the Sales Inquiries Division for The Falk Corp. of Milwaukee. William J. Urban is now Manager of Coupling Sales, and Don K. Lambert is Manager of Distributor Sales. Roland E. Govan heads Sales Promotion, a newly organized department at Falk. Eugene H. Millmann and A. H. Kelley are working with him.

Three former sales trainees, Nile E. Sweet, Harold C. Fleischer, and Elliot G. Heuser, have received appointments to Falk district sales office staffs in Detroit, New York, and Wisconsin.

At the batch plant for the southern half of the Taconic Parkway job, a cement truck unloads into a hopper which feeds two Butler bins with a combined capacity of 800 barrels.

Here a batch truck dumps to the skip of a MultiFoote 34-E dual-drum paver, while a Butler 4,000-gallon tank on an International truck feeds water to the paver.

C. & E. M. Photos



Onto the gravel foundation course goes a batch of concrete at a slump of 1 to 1½ inches, to be evened off by a Blaw-Knox spreader.

Parkway Extended

Two Dual-Drum Pavers Lay Slabs of Concrete 24 Feet In Width on Each Roadway In New York State

By WILLIAM H. QUIRK,
Eastern Editor

(*Photo on page* 1)

✦ THE longest paving contract ever awarded in New York State added a 21.11-mile section last year to the north end of the Taconic State Parkway east of Poughkeepsie in Dutchess County. With the completion of this stretch, the Parkway was extended from State Route 55 northward to State Route 199 at Lafayetteville. This important new construction eliminates the necessity for traffic to pass through the city of Poughkeepsie, the worst bottleneck to motorists traveling between New York City and Albany and destinations beyond.

A contract for paving the dual highway was awarded by the New York State Department of Public Works to John Arborio, Inc., of Poughkeepsie, N. Y., on a low bid of $4,610,525. Grading and drainage structures on the 21-mile stretch of parkway were completed under previous contracts awarded since the war. Major structures include one three-span girder and five rigid-frame bridges. Concrete paving started in April, 1949, and was finished in time for the dedication of this new section last October. Two dual-drum pavers and two separate concrete batch plant set-ups were employed in constructing the 8-inch reinforced-concrete pavement, 24 feet wide on each roadway.

80 Miles of Parkway

With the completion of this 21-mile contract on the Taconic State Parkway, the motorist can now travel on over 80 miles of parkway from New York to a point more than halfway to Albany. At the present northern limits of the new section, U. S. 9 may be reached by driving west 10 miles to the village of Red Hook. The finished section is entirely on new location, having a minimum right-of-way width of 400 feet. The two roadways are separated by a grassed strip of varying width, and even the elevations of these separate paved ways have been varied. The parkway is for pleasure vehicles only; main crossings at grade are eliminated, and access points have been reduced to a minimum. There are no traffic lights.

The 24-foot pavements of 8-inch reinforced concrete are bordered by 9-inch white reflecting curbs which are flanked by 8-foot shoulders. Shoulders, side slopes, and mall are all seeded. The contract includes the reconstruction of State Route 44 where it passes under the parkway, and the paving of numerous access drives and traffic interchange facilities.

The long paving contract was awarded in September, 1948, and the remainder of the construction season that year was devoted to placing the run-of-bank gravel foundation course, 6 inches thick, over the subgrade. Under each roadway the gravel blanket is 26 feet 6 inches wide, which brings the foundation material out beyond the edges of the curbing. Several pits close to the right-of-way provided a good quality of gravel, and the hauls averaged 1 to 2 miles. The same pits also supplied material for the shoulders. During the course of the gravel work the contractor used three Northwest shovels—two 2½-yard units and one 1½ yards; a Byers ¾-yard shovel; and a Lorain ¾-yard truck crane. Over 50 trucks did the hauling. Dozing in the pits and on the roadway was handled by three Caterpillars—two D8's and one D7; an International TD-18; and two Allis-Chalmers HD-5 tractors. Final shaping of the base course was done by four Caterpillar motor graders—three No. 12's and a No. 112.

When the shoulders were constructed, following the paving and curb work, the Allis-Chalmers machines were fitted out with Tracto-Shovels. They loaded the gravel into an Apsco 804 spreader which pushed the material out beyond the curbing to form the shoulders.

Two Batch Plants

To facilitate the construction, the 21-

(*Continued on page* 48)

Here's the whole paving line-up on a section of the 21-mile job. John Arborio, Inc., used two pavers and two separate batch plant set-ups for each 10½-mile section of 24-foot roadway.

21 Miles in One Contract

Atlas Duraplastic white cement is mixed with sand and water in a Kwik-Mix ½-bag Dandie to produce a white mortar reflecting surface for the 9-inch-wide parkway curbing.

From the trough into which the mortar is discharged, it is shoveled out by hand—and spread on a gray concrete base—then scored with a simple hand tool.

White Reflecting Curb Laid On Both Sides of Pavement For Safer Night Driving

✦ THE most significant feature of the new 21-mile addition to New York State's Taconic State Parkway, east of Poughkeepsie, is the white reflecting curb bordering the edges of the two 24-foot concrete roadways. This safety measure was included in the construction design primarily to facilitate driving at night, the period when the greatest number of accidents occur.

The 9-inch-wide curbing slopes up and away from the concrete pavement on a 45-degree angle. It is surfaced with white cement mortar, and scored with corrugations at right angles to the roadway. These corrugations produce the desired reflection, since they catch the headlight beams from cars and reflect them back to the driver. During a rain, the reflecting quality is increased by the film of water covering the white concrete scoring. Thus the safety features are augmented when needed most, as during a rain at night.

On this new parkway section, built for the New York State Department of Public Works by John Arborio, Inc., of Poughkeepsie, N. Y., the white reflecting concrete curbing totals 448,080 linear feet. The curbing was installed by Provanzano & Morelli of Hewlett, Long Island, N. Y., in a little less than six months with a working force that never exceeded 35 men. As much as 4,500 linear feet of curbing was constructed in a 10-hour day.

Base of Transit-Mix Concrete

The base for the concrete curb, which extends down to the bottom of the adjoining paving slab, was laid with transit-mix concrete delivered to the job by the Dutchess Quarry & Supply Co. of Pleasant Valley, N. Y. Truck-mixers chuted the concrete into the narrow space between the edge of pavement and the Heltzel steel forms which were set by hand for the back of the curbing. As the concrete was placed, a Jackson vibrator was used.

A 1-inch white surface was then applied to the top of the gray concrete base. This topping consisted of a 1:1.75 mortar of Universal Atlas White Duraplastic cement and sand. The equipment to do this work was strung out in single file and moved steadily along over the 12-foot lane alongside of which the curb was being constructed.

First came a 750-gallon tank truck with a long hose line to furnish the water for the mix. Behind that came a truck carrying the sand and bags of cement for the mortar. The truck towed close to its tail-gate a Koehring Kwik-Mix ½-bag mixer into which went the cement, sand, and water. In turn, the mixer towed a metal trough mounted on six rubber-tired wheels, into which the mortar was discharged. From the trough the mortar was shoveled out by hand and spread out over the base of curb.

Speedy Scoring

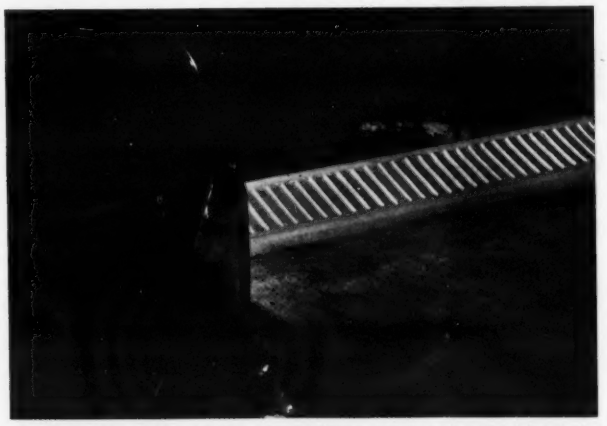
The screeding of the mortar to an even 1-inch thickness was done smoothly with a simple hand tool. After that the scorings or corrugations were impressed into the surface while the mortar was still soft. The sawtooth indentations were made with a hand tool which slid up and down in a guide frame. After a little experience, however, the finisher doing this work became so adept that the guides were no longer needed. The scoring is shallow, about ¼ inch, with the corrugations or ridges slightly less than an inch apart. Then Hunt Process Clear curing compound was sprayed on.

With the use of air-entraining cement in the mortar, the white surface was always plastic enough to make the scoring a simple, easy operation, and to insure good definition to the ribbed markings. Lack of segregation or bleeding was another desirable feature attributed to the air entrainment. Thus the finisher doing the scoring kept right up with the rest of the operations. As the little construction column filed along, the finished curb appeared in its wake.

Pictures taken on the parkway on dark, rainy nights show clearly how car lights are reflected back from the faces of these sawtooth markings. If the surface were smooth, even though white, the light would be diffused away and the safety effect would be lost. Motorists should welcome these white reflecting curbs.

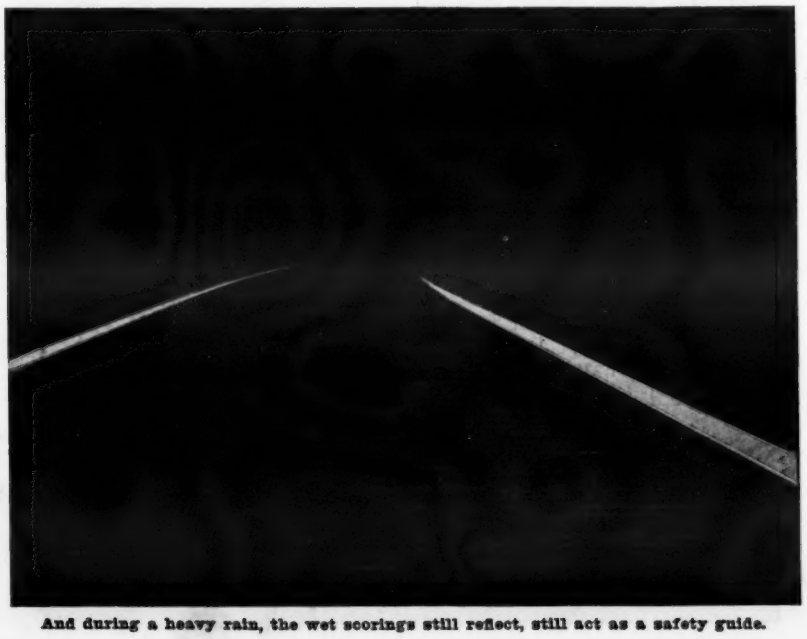
C. & E. M. and Universal Atlas Photos

At island ends and accesses, the white reflecting curb is horizontally scored with the hand tool.



At night the faces of the corrugations catch and reflect back to drivers the headlight beams from cars.

On a dry night, the curbing creates a bright white guide to the road ahead.



And during a heavy rain, the wet scorings still reflect, still act as a safety guide.

Parkway Is Extended 21 Miles in Contract

(*Continued from page 46*)

mile job was split into two equal sections of 10½ miles each. Each section had its own concrete batch plant supplying a dual-drum paver that worked each half. The plant for the lower or southerly half was located at Washington Hollow, 8 miles north of the south end of the project. The plant for the upper section was at Clinton Corners, 8 miles south of the north end.

Sand and stone aggregate came from the Dutchess Quarry & Supply Co. of Pleasant Valley, N. Y., delivery being made by trucks to the stockpiles at the plants. During the peak of operations, the trucks hauled from 18 to 20 hours a day to insure that enough material was on hand for paving. The source of supply was pits and a quarry near Pleasant Valley which required an average 4-mile haul for the stone and 6 miles for the sand to each plant.

Portland cement, which totaled 224,455 barrels in the estimate, was furnished by the Universal Atlas Cement Co. from its plant at Hudson, N. Y. There the contractor set up a receiving bin for the bulk cement. Cooney Bros. of Tarrytown, N. Y., delivered the cement to the job batch plants in covered trucks holding from 60 to 70 barrels each; the haul was 30 miles. The job mix called also for natural cement. This came in bags from Century Cement Mfg. Co., Inc., at Rosendale, N. Y., being delivered by truck after a 25-mile haul.

At the lower plant, the aggregate was fed to a Butler 30-ton storage bin by a Northwest crane with a 62-foot boom and an Owen 2-yard clamshell bucket.

C. & E. M. Photo
The time comes to move this 32-ton Rex 34-E paver to the other end of the Taconic Parkway job. Accordingly it climbs a timber ramp onto a Hughes 85-ton trailer towed by a Sterling truck.

A D8 dozed the material continually into stockpile formations. The cement trucks dumped their contents into a hopper from which the cement was moved by a worm gear and elevator to two Butler bins having a combined capacity of 800 barrels. Equipment at the northerly plant consisted of two Blaw-Knox storage bins—a 22-ton unit for aggregate and a 375-barrel bin for cement. The aggregate was handled by a Byers crane equipped with a 40-foot boom and an Owen 1-yard clamshell bucket. A D7 dozer assisted in building up the stockpiles.

The Mix

Nine-bag batches were used—eight bags of portland and one of natural cement. The dry weights were:

Portland cement	773 lbs.
Natural cement	94 lbs.
3A stone (3-inch)	1,474 lbs.
2 stone (2-inch)	734 lbs.
1 stone (1-inch)	734 lbs.
Sand	2,015 lbs.
Water	40 gals.

The slump from this mix varied usually from 1 inch to 1½ inches. Water for the concrete was obtained from three good sources along the parkway where clear creeks were at hand. One Marlow and two Jaeger 3-inch pumps filled tank trailers that serviced the pavers. Four tank trucks, two to a paver, hauled the water. They included a White truck with a Fruehauf 2,000-gallon tank trailer; a Mack with another Fruehauf 2,000-gallon tank; a Mack with a 4,000-gallon Butler tank; and an International with a 2,000-gallon Butler tank trailer. Pumps on the pavers transferred the water from the supply trucks to the mixing drums through 1½-inch hose lines. Wear on the hose from scraping as it was dragged along was lessened by twisting a light flexible cable around the hose line.

As many as 20 batch trucks, holding two batches each, hauled to each paver, first picking up the aggregate, then the portland cement, and finally the natural cement which was dumped into the trucks by hand from a platform. Tarpaulins were pulled over the tops of the trucks to keep the contents from blowing about. All the paving was done with two 34-E dual-drum pavers—a Rex and a MultiFoote—equipped with

(*Continued on next page*)

The Ninth of a Series in the interest of more efficient use of steel . . . a vital American resource

LACLEDE MULTI-RIB REINFORCING BARS

NOW . . . Available by Number in Standard Sizes of New A.S.T.M. Serial Designation A305-49 Table I

Thanks to A. S. T. M. specification A305-49, designers now have a more efficient bar for concrete reinforcement . . . one that provides **increased anchorage** which when properly used will give appreciable **savings in steel and concrete.** Advanced design Laclede Multi-Rib Reinforcing Bars exceed the A305-49 specification. They are available in uniform round sections in all standard sizes and can now be ordered by number.

TABLE I A.S.T.M. SERIAL DESIGNATION A305-49

Dimensional Requirements for Deformed Steel Bars for Concrete Reinforcement

Bar No.°	Unit Wt. Lbs./Ft.	NOMINAL DIMENSIONS ROUND SECTIONS Diameter-Inches Decimal	Cross Sectional Area Sq. Inches	Perimeter	REQUIREMENTS OF DEFORMATIONS Max. Avg. Spacing Inches	Min. Height Inches	Max. Gap. Inches ‡
3	0.376	.375	0.11	1.178	0.262	0.015	0.143
4	0.668	.500	0.20	1.571	0.350	0.020	0.191
5	1.043	.625	0.31	1.963	0.437	0.028	0.239
6	1.502	.750	0.44	2.356	0.525	0.038	0.286
7	2.044	.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9*	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10*	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11*	5.313	1.410	1.56	4.430	0.987	0.071	0.540

*These sections have the same weight and area as bars formerly known as 1" Sq., 1⅛" Sq. and 1¼" Sq.
‡Chord of 12½% of Nom. Perimeter.
°Bar numbers are based on number of ⅛" included in the nominal diameter of the bar section.

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- COMBINED CURB & GUTTER
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- FLEXIBLE FORMS
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It's ideal where specifications do not permit dummy or full depth joints.
Overhead hanger with clearances for hand tooling has flexibility of position. Provides an unbroken curb.
Sturdy, easy handling face plates in either battered or non-battered types. Faster installation.
Heltzel BUILDS IT BETTER

HELTZEL CURB and GUTTER SUPPORTS

The only flexible form with three alternate methods of support — (1) Full depth division plates, (2) Skeleton division plates, and (3) Overhead hangers. All Heltzel forms improve contractors' operations, because they speed up job while making the work easier.

PUT HELTZEL TO WORK MAKING MONEY FOR YOU

Before you buy, before you start a job — check with Heltzel! Heltzel better built curb and gutter forms in standard types will save for you. Special shapes designed by Heltzel to job specifications make difficult jobs click like run-of-mine work. Write for information now.

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ROAD and AIRPORT FORMS _____
BATCHING PLANTS and BINS _____
Firm _____
Address _____
City _____ State _____
Signed _____

HELTZEL STEEL FORM & IRON CO. WARREN, OHIO · U. S. A.

32-foot booms. Batches were mixed a total of two minutes in a paver.

Paved in 12-Foot Lanes

The 24-foot concrete roadways were paved in 12-foot lanes, the initial lane being laid with the paver outside the forms, and the adjoining lane with the paver inside the forms. The big pavers were not run over the concrete. When they were moved about the job, the 32-ton pavers were ramped onto a Hughes 85-ton trailer pulled by a Sterling truck. Over 50,000 linear feet of Blaw-Knox forms were on hand, and from a half to a mile of lined and graded forms were always in place ahead of the pavers. Form pins were driven by two Chicago Pneumatic jackhammers powered by either an Ingersoll-Rand or a Worthington 110-cfm truck-mounted compressor.

On the two equal sections, working independently of each other, the base course was brought to precise grade between the forms, or between a form on one side and the finished 12-foot lane on the other, by either a Blaw-Knox or a Buckeye Finegrader. Excess material was thrown off to the side by these machines which were secured to the forms ahead by cables. A final rolling was done by a Buffalo-Springfield 6 to 8-ton tandem roller, and the grade checked with a scratch template. When the paver worked between the form and finished slab, it pulled this scratch template directly behind it.

At 94-foot 6-inch intervals, a ¾-inch impregnated felt expansion joint was placed in the concrete. The expansion material was left ¾ inch low and later the joint was filled with tar. Acme spade-type assemblies were used at these expansion joints, the spades or dowels measuring 12 inches x ½ inch and spaced on 14½-inch centers across the joint, or 10 spades to a 12-foot slab. There are no transverse contraction joints. The center longitudinal joint between the adjoining slabs is simply a butt joint. However, on fills the slabs are tied together with 14 x ¾-inch bars on 5-foot centers. This same type of tie on 5-foot centers is also used along the side of the slab adjoining the curbing. The tie rod is a male and female connector which passes through a hole made for it in the forms. The slabs are also reinforced with wire mesh placed 2½ inches below the top of the concrete. Both the tie rods and the reinforcing steel mesh were supplied by Wickwire-Spencer.

Finishing Operations

Techniques at both pavers were similar. When the MultiFoote, for instance, was working inside the form, it pulled along a strike-off which leveled the concrete at the proper depth for placing the steel reinforcement. More concrete was then discharged to fill up the forms, and a Blaw-Knox paddle-type spreader evened it off. This was followed by a Blaw-Knox dual-screed transverse finishing machine. Behind that came the contractor's own diagonal-type screed, 18 feet long and working on a 45-degree angle across the surface of the concrete. This machine operated with a 6-hp gasoline engine. Similar equipment was used with the Rex paver.

Behind the finishing machines the surface of the concrete was floated with a steel and aluminum lute, 10 feet long, checked with a 10-foot straight-edge, and dragged with a burlap belt. A wire-broom finish was applied, the steel caps were removed from the tops of the expansion joints, and the joints were edged. The finished pavement has a 2¼-inch crown. As the concrete set up, Scutan paper was pulled over the surface for curing. A 2-foot strip was laid along each edge. One wide strip, 12 feet across, was rolled over the slab covering the concrete. When the forms were removed the next morning, the narrow strips were pulled down over the exposed sides of the slabs. The paper was weighted to keep it from blowing away and left on the concrete for 4 days. Construction traffic was not permitted on the new paving for 7 days.

There were, of course, both long hauls and short hauls with the batch trucks. But the contractor planned his work as much as possible so that when a long haul was required at one paver, a short haul was in effect at the other machine. In this way he kept his batch trucks busy all the time, and kept the number required to a minimum. He also did not have to lay off any with the resultant difficulty in replacing trucks when they were again needed.

The long dry spell during the 1949 construction season, while bad for the water supply, was excellent from a contractor's point of view. On only one day were both pavers idle due to bad weather. Together, the pavers averaged from 4,000 to 4,200 linear feet of 12-foot concrete lane in the course of a

(*Concluded on next page*)

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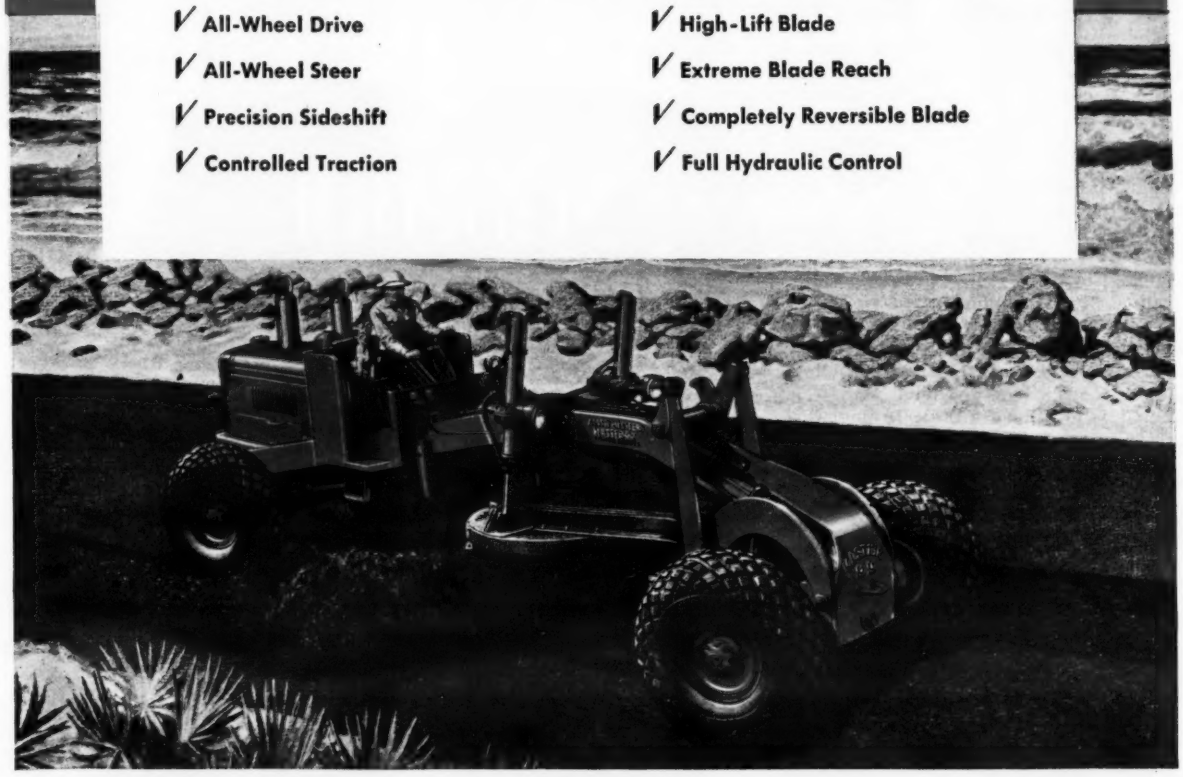

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no other graders will perform so many construction and maintenance jobs so well. Your nearby Austin-Western distributor will be glad to tell you the whole story.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY SINCE 1859 Austin Western

Parkway Is Extended 21 Miles in Contract

(*Continued from preceding page*)

9-hour working day. From Monday to Friday a 9-hour day was worked, and 8 hours on Saturdays. There was little to chose between the two pavers. The best days recorded by each were 2,638 linear feet by one, and 2,633 feet by the other in 10 hours of work.

Quantities and Personnel

The major items in this 21-mile paving contract included the following:

Selected borrow (shoulders)	185,000 cu. yds.
Portland cement	224,455 bbl.
Natural cement	32,265 bbl.
Metal reinforcing for paving	629,600 sq. yds.
Cement-concrete pavement	140,210 cu. yds.
Reflecting concrete curbing	448,080 lin. ft.
Foundation course—gravel	127,300 cu. yds.
Topsoil, furnished and placed	29,850 cu. yds.
Topsoil, placed from stockpiles	56,300 cu. yds.
Furnishing sod and sodding	83,200 sq. yds.

John Arborio, Inc., employed a force averaging 200 during the peak of operations under the direction of Luke C. Reed, Superintendent. Jack Riddle was Office Manager for the contractor.

For the New York State Department of Public Works, Frank J. Carlon was Resident Engineer. The project was under the supervision of District 8 which is headed by J. S. Bixby, District Engineer with headquarters at Poughkeepsie. B. D. Tallamy is Superintendent for the Department of Public Works.

New 10-Foot Mixer For Plaster, Mortar

A new 10-cubic-foot plaster and mortar mixer has been announced by Muller Machinery Co., Inc., Metuchen, N. J. The mixer is of the tip-over type and has a mixing drum 36 inches in diameter and 37 inches long. Heads and shell are of heavy tank steel and mixing blades give end-to-end action.

Provided with a power tilt and engineered for simple and easy repairing in the field, the mixer is driven by a Wisconsin air-cooled engine rated at 18.7 hp at 2,000 rpm. Double-roller chains and machine-cut gears are used for power transmission to the mixing paddles. Trucks are provided with a towing bar and have 4:00 x 12 pneumatic tires in front and 5:50 x 16 in the rear.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 71.

Supports for Screed

A complete line of screed supports for all conditions of light or heavy screeding is now available from Richmond Screw Anchor Co., Inc., 816 Liberty Ave., Brooklyn 8, N. Y. New additions to the line include the offset screed head designed to hold either a 1-inch ID pipe or a 1¼ x 1¼ x 3/16-inch T-Bar. This head is completely adjustable from above by means of a speed wrench.

Other new items are the screed bolt for heavy screeding with a 2 x 2 x ¼-inch T-bar (also adjustable from above), the form bracket, adjustable base, subgrade stake, subgrade base, subgrade chair, form bolt, and curb bolt. The last two are used for supporting hanging forms for walls or curbs.

Further information may be secured by writing to Department S of the company. Or use the Request Card at page 16. Circle No. 60.

How to Seal Black-Top

Black-top, like many other materials, may be misused or improperly laid. Sometimes it is porous and lends itself to the harmful effects of frost. Other agents such as salts, acids, anti-freezes, oils, water, and temperature changes speed up its deterioration. Moreover, where there is no heavy rolling traffic to work and seal the pavement, black-top needs to be sealed with a surface coat for adequate protection.

The question of when a bituminous pavement should be sealed, how, and why, is discussed in a pamphlet issued by Maintenance Engineering Co., 16 W. Johnson St., Philadelphia 44, Pa. It explains how the seal may be applied and how much it costs. It features Meco surface seal, a coal-tar derivative emulsified with water and a completely irreversible colloid. Characteristics of the seal and the finished pavement are also described in the circular.

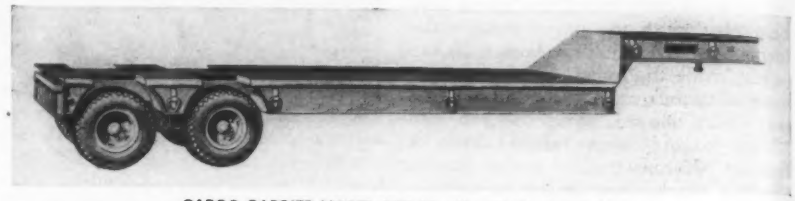
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 64.

Ginzel of Baker Co. Dies

Lee A. Ginzel, Secretary and Advertising Director of The Baker Mfg. Co., Springfield, Ill., died recently. Mr. Ginzel was a civil-engineering graduate of the University of Illinois. He had been associated with the Baker Co. since its incorporation 41 years ago.

SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"

Capacities through 75 Ton—Semi and Full Trailers



CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular, forged, heat treated axles with CAMBER.

FRAME—Constructed of beam sections throughout, electric welded. A ruggedly strong and efficient unit with minimum weight.

TRANSPORT TRAILERS, INC.

TRANSPORTATION ENGINEERING A SPECIALTY

CEDAR RAPIDS, IOWA, U.S.A.

FIFTY YEARS experience and background . . . is reflected in the complete line of Construction Tools offered on the occasion of our FIFTIETH ANNIVERSARY.

Throughout the years, SCHRAMM INC., has endeavored to provide not only the best Air Compressors possible, but also recommended the tools that in our experience would prove the most effective and economical.

SCHRAMM

Climaxes 50 years Progress with its Golden Anniversary line of

CONSTRUCTION TOOLS

FROM WAGON DRILL... TO CHAIN SAWS

It is, therefore, with considerable pride that we now offer our GOLDEN ANNIVERSARY line of Construction Tools . . . ranging from the WDR-126 Wagon Drill to Chain Saws and also the necessary air hose with all accessories.

THE SCHRAMM CONSTRUCTION TOOLS illustrated here represent only a few of the many available . . . tools that embody our many years of experience and skilled workmanship. Add to this list, circular saws, paint sprays, sandblasts, concrete vibrators, wood and steel drills, air guns, etc.

Write for new 8-page Color Booklet No. SCT-50

SCHRAMM INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

TIE TAMPER—*A well balanced tool to tamp ballast under railroad ties.*

BACKFILL TAMPER—*Tamps more yards of dirt than several men with hand tools.*

PAVING BREAKER—*Use in the hardest concrete demolition work, Street and Highway repairs.*

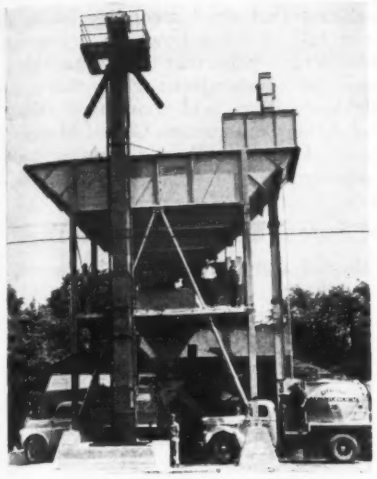
SHEETING DRIVER—*For driving wood or light steel sheeting.*

CLAY DIGGER—*For digging in clay, shale, hardpan or frozen ground.*

TRENCH DIGGER—*For open trench digging where operator can stand erect.*

WDR-126 WAGON DRILL—*Drills at any angle to depths of 24 feet or more.*

ROCK DRILLS—*Fast drilling tools for either wet or dry drilling.*



Blaw-Knox Hi-Boy truck-mixers pull in to a B-K one-stop loading plant.

Saves Loading Time With One-Stop Plant

The accompanying illustration shows a recent installation of a Blaw-Knox one-stop truck-mixer loading plant. The bin has one cement and three aggregate compartments, with both aggregates and cement weighed in a common weighing batcher. The batcher has an 18-inch circular discharge opening which makes it possible to charge truck-mixers without the use of a confining chute. This type of plant permits speedy and efficient operation with a minimum investment, according to the Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.

The truck-mixers shown under the plant are the new Blaw-Knox Hi-Boys. They have a revolving hopper which is placed in the upright position for loading and inverted for discharging, thereby eliminating the use of gates or doors at the discharge end of the mixer.

Each of three aggregate compartments in this one-stop batching plant has a capacity of 45 tons, and the cement compartment has a capacity of 275 to 300 barrels. The weighing batcher is of the 94 BTM type with a four-beam scale. A cement elevator with an undertrack unloading screw has a capacity of 50 tons per hour. The dealer is using both 2 and 3-yard Hi-Boy truck-mixers.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 104.

An Overhead Loader For All-Around Work

The Austin Overshot loader is a built-on attachment for any late-model crawler-type tractor and is designed to handle a variety of digging and loading operations ranging from tough broken rock to fine sand or snow. Manufactured by John Austin, Inc., 703 First National Bank Bldg., Denver 2, Colo., the new overhead loader is available in three bucket sizes: Models 6-C, 7-C, and 8-C, with rated capacities of 1½, 2½, and 3½ cubic yards, respectively. The company recommends their use on crawler-type tractors with a minimum drawbar pull of 15,500, 21,000, and 28,000 pounds, respectively.

In operation, the driver dozes his load as he would with a blade; then by means of a single lever he raises the load in a straight overhead arc and dumps it into the hauling unit. The bucket may be held at any position simply by releasing the control lever. Overhead loading, the manufacturer explains, eliminates swinging and blocking to dump the load, and thereby saves working time.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 154.

A 7-Inch Bench Shaper

A bulletin illustrating and describing a 7-inch bench shaper is offered by the South Bend Lathe Works, South Bend 22, Ind. This 4-page bulletin supplies all specifications and explains all features of the machine and its accessories. Prices are listed for the shaper, 3-drawer steel stand, motor, and tools.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 77.

The Austin Overshot loader is a built-on attachment for any late-model crawler tractor.

GRIFFIN

WELLPOINT SYSTEMS
JETTING PUMPS

•••••

GRIFFIN WELLPOINT CORP.
881 E. 141st ST., NEW YORK 54, N.Y.
TEL. ME. 5-7704

WICKWIRE ROPE A PRODUCT OF CF&I

Ask any user . . . you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® *Preformed*. It lasts longer — is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant — Palmer, Massachusetts.

IN THE EAST—Wickwire Spencer Steel Div. of C. F. & I., 500 Fifth Ave., New York 18, N.Y. • IN THE ROCKIES—The Colorado Fuel and Iron Corp., Continental Oil Bldg., Denver 2, Colo.
ON THE WEST COAST—The California Wire Cloth Corp., 1080—19th Ave., Oakland 6, Cal.

No Idle Machines On Dickinson Dam

Repair Shop Cuts Down Time By Systematic Schedule of Maintenance and Repair

✦ THERE may have been an idle machine at Dickinson Dam, but it was not out of the line for long.

For the steady performance of equipment on the North Dakota dam of the Missouri Basin unit (see article on page 34) depended upon a heads-up equipment maintenance force. Almost 40 pieces of heavy equipment were maintained in operating condition by one equipment foreman and 4 mechanics.

Equipment maintenance was centered around three buildings: a small lubricating shed, a 40 x 40 Butler steel equipment repair shop, and a 20 x 60 foot Butler warehouse where spare parts were stored for use. The maintenance policy was aimed at keeping all units in operation through preventive maintenance where possible, and by repairing breakdowns in the shortest possible time so the machines could return to their work.

The equipment fleet at Dickinson consisted of the following main units:

5 Caterpillar D8's
2 earth-moving scrapers
4 Terra Cobras
1 Galion 102 motor grader
1 Lima shovel-dragline, 2-yard
1 Lima ¾-yard machine
2 air compressors
1 Rex dual-drum paver
23 trucks
1 sheepsfoot roller
6 pumps
4 light plants

Split Shifts

Since the earth-moving equipment worked two 10-hour shifts per day, it was desirable to cover both shifts with the least possible confusion. A 3-man mechanical crew worked in the main shop from 6:00 a.m. to 4:30 p.m., and the fourth mechanic stood a regular shop watch from 2:30 in the afternoon until 1 a. m. the next morning. This permitted working hours to be well covered, and repairs made on the spot if necessary.

All lubrication was also handled by two men. They worked from a small lubricating house, which was equipped with power equipment for servicing. Mobile equipment came to this shed once a shift to be fueled and lubricated. Stationary equipment unable to come in was serviced by a truck-mounted portable unit. As a rule the two grease monkeys dispensed from 1,000 to 1,200 gallons of light diesel fuel per shift, and performed countless lubrication jobs. By splitting their duty they worked from 7 a. m. to 1 p. m. to cover the morning shift, and then returned from 4:30 to 9:30 p. m. to cover the late watch.

A regular schedule of lubrication was observed, and manufacturer's recommendations followed. Socony-Vacuum oils and greases were used. The working life of engine crankcase oil was extended safely to 120-hour changes, by the use of Winslow oil-conditioning elements in all the equipment. A goodly stock of these elements, along with practically any other repair part, was stored ready for use in the long metal warehouse.

Preventive maintenance consisted mostly of lubrication and welding. Welding equipment on the dam included a stationary Glenn-Roberts ac machine in the main shop, oxyacetylene equipment, and a Lincoln dc portable arc welder. G-E and Lincoln all-purpose welding rod was used for most of the routine welding.

Special hard-facing preventive maintenance was done to extend the life of dragline buckets, teeth, sheepsfoot tampers, and other metal surfaces which had to stand a great deal of abrasion. A supply of Tournaweld was used up for hard-facing; this brand is reported to be no longer available. Stoody self-hardening rod was used generally for shovel and dragline bucket teeth. Tube Borium, also a Stoody product, was used to combat abrasion inside and outside the buckets along the lips and running edges.

The main shop was well equipped to handle repair jobs. Equipment in the shop included a set of heavy-duty tools for each mechanic, a Thor valve grinder and refacer, a Buda hydraulic nozzle tester, a KO reseating tool, a Barrett brake riveting machine, a Black & Decker electric drill press, a Quincy compressor, bench grinders, and welding equipment. There was a Yale hoist on a portable stand, which was powerful enough to lift a Caterpillar D8 engine.

Equipment repairs were the responsibility of H. A. Schilling, Equipment Foreman. Mechanics were Clifford Bailey, Mac Kinzel, Pete Eischen, and Archie Starrett. Jack Rackley was paver operator and usually took care of minor repairs to the concrete equipment around the spillway.

More and more, superintendents are realizing that good mechanics with a head full of know-how are becoming increasingly important to the profitable operation of a project such as this one. Dickinson Dam will soon be finished and Adler Construction Co., of Madras, Oreg., can then take on another one elsewhere.

Midwest Representative Dies

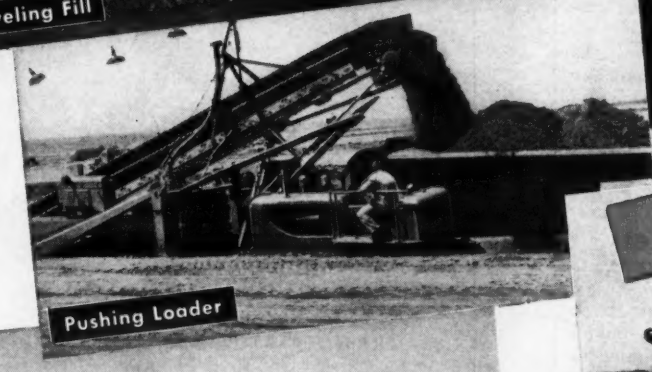
Harold James Racette, sales representative for Flexible Steel Lacing Co. of Chicago, died recently at his home in Kansas City. He had been the company's midwest representative since 1934.

55 Allis-Chalmers Tractors and Motor Gr

SETTING SERVI

42 HD-19 Hydraulic Torque Converter Tractors

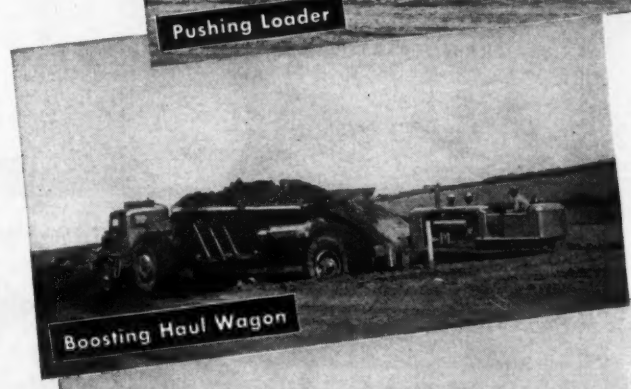
Leveling Fill



Pushing Loader

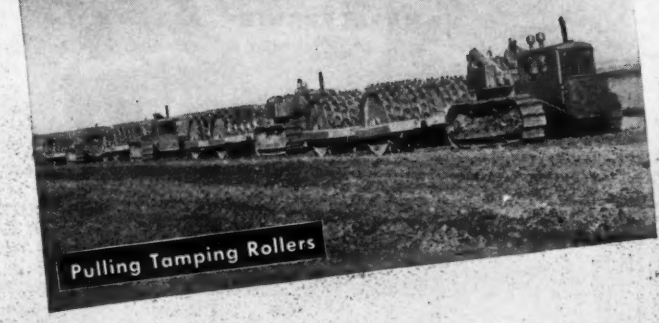
12 Model AD Motor Gra

Maintaining Haul Road



Boosting Haul Wagon

Sloping Bank



Pulling Tamping Rollers

"SEEING IS BELI

Ask your Allis-Chalmers Dealer for a demo

Booklet on Foundations And Underpinning Methods

A 12-page booklet addressed to architects, engineers, and contractors concerning foundations and underpinning is offered by Spencer, White & Prentis, Inc., Engineers and Contractors, 10 E. 40th St., New York 16, N.Y. Subjects discussed in this fully illustrated folder include Tuba steel cylinder foundations, Pretest underpinning and foundations, Drilled-in-Caisson foundations, foundations under existing building, caisson foundations, the Pretest method applied to construction other than foundations, mass-concrete construction, heavy shoring, and building moving. All technical data on design, performance, and installation are given in the booklet.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 137.

Truck Conversion Units

Two bulletins on Coleman 4-wheel-drive conversions for General Motors and Ford trucks are now available from The American-Coleman Co., 340 W.O.W. Bldg., 14th and Farnam, Omaha, Nebr. These conversion units are designed to enable standard rear-wheel-drive trucks to obtain better traction on loose material, soft surfaces, icy roads, and steep grades.

The circulars illustrate with cutaway photographs the Coleman front-wheel assembly and transfer case. They explain that the unit is precision-built to become an integral part of the truck it is designed for. A full description of the unit and its component features is given.

This literature may be obtained from the company, or by using the Request Card at page 16. Request Circular CF-11 for the Ford unit, or circle No. 5. Request Circular CG-51 for the General Motors unit, or circle No. 51.

Care of Transits and Levels

To help contractors and engineers in the field adjust surveying transits and wye, dumpy, and precision tilting levels, two new pocket-size service booklets have been released by W. & L. E. Gurley, Troy, N. Y. Adjustments of transits, care and maintenance, and causes of mechanical and instrumental errors and their correction are discussed in Service Booklet A, while Booklet B contains similar information on levels.

Free copies of the booklets may be obtained by writing to the company, or use the Request Card on page 16 for further information. Circle No. 96.

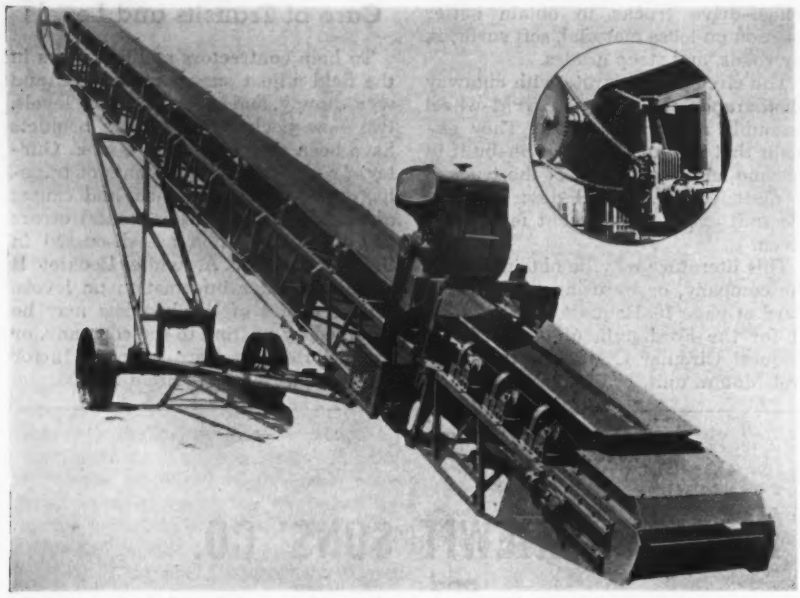
for PETER KIEWIT SONS' CO.
and
MORRISON-KNUDSEN CO.
on their 18½-million-yard Garrison Dam job in North Dakota, World's Largest Rolled-Earth Fill Dam.

Fleets of A-C's have set a terrific pace since early in 1949 on this 20-hour-a-day, six-day-a-week job. Production during good weather hit 100,000 yards and more a day! YET DOWNTIME HAS BEEN MUCH LESS THAN THE CONTRACTORS ANTICIPATED—based on previous earth-moving experience.

This outstanding service record again demonstrates that A-C equipment is built to take it. Proves again that extra production time is gained through such advantages as simplified adjustments and repairs . . . electric starting . . . quick, easy removal of major assemblies . . . interchangeability of many GM engine parts on all makes and models of A-C diesel tractors and motor graders. PLUS extended lubricating periods — 1,000 hours on truck wheels, idlers and support rollers.

For more production, for less upkeep, think of Allis-Chalmers when you think of road-building equipment.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.
Originator of the Torque Converter Tractor



Note the 3-inch Cone Drive geared speed reducer for this 50 foot motorized conveyor. The insert shows it with guard removed.

Lightweight Reducer For Conveyor Units

Thirty portable 50-foot motorized conveyors were recently ordered from George Haiss Mfg. Co., Inc., Division of Pettibone Mulliken Corp., of New York, N. Y., for shipment to Okinawa by the U. S. Army Corps of Engineers. These units are designed to meet minimum weight and low-cost requirements yet retain strength and freedom from service troubles. One of the factors contributing to their low weight is the use of a standard Cone-Drive geared speed reducer in the main drive. Michigan Tool Co., Detroit manufacturer of the reducer, estimates it weighs about one-third as much as a conventional reducer of the same load capacity; it has a 3-inch center distance vs. a 5-inch center distance for the conventional.

The reducer, a 5-to-1 ratio, drives the head pulley for the 30-inch-wide belt at 400 fpm from a 22-hp gasoline engine operating at 1,800 rpm. It can handle the full engine load, although normally only about 9.2 hp is required to operate the conveyor.

The compact and lightweight drive is designed to reduce the possible overhung and unbalanced load. When elevated to its full 21-degree incline, the conveyor reaches a height of 17 feet. The enclosed drive gears are protected against dirt, an important consideration in Pacific island service. A sprocket and roller chain connects the drive to the headshaft.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 132.

Heads Jack Company Sales

P. H. McManus, a veteran of 31 years of service with Templeton, Kenly & Co., Chicago manufacturer of Simplex jacks, has been made General Sales Manager of the company.

USE RIGHT BUCKET FOR THE JOB

Hayward makes all three—clamshell, electric motor, orange peel. A Hayward recommendation is unbiased.

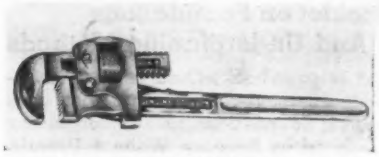
THE HAYWARD CO., 32-36 Dey St., New York

Hayward Buckets

The Stillson Wrench Improved by Treating

The Walworth Genuine Stillson wrench now features a special zinc coating to resist rust and corrosion, and greater strength and toughness derived from a new scientific heat treatment of the steel, according to a recent announcement by the Walworth Co., 60 E. 42nd St., New York 17, N. Y.

The electroplated zinc coating for resisting rust and corrosion is especially important to tool users in areas with a humid climate. Advanced metallurgical improvements have also given the Stillson wrench greater hardness, toughness, and strength, without making it heavier. This increased strength is imparted by scientific heat treatment. The teeth in the Genuine Stillson are sharp and of the proper depth to give a fast, quick bite. The design affords the maximum amount of metal for backing up the biting edge. Genuine Stillson pipe wrenches come in a full range of sizes from 6 to 48 inches.

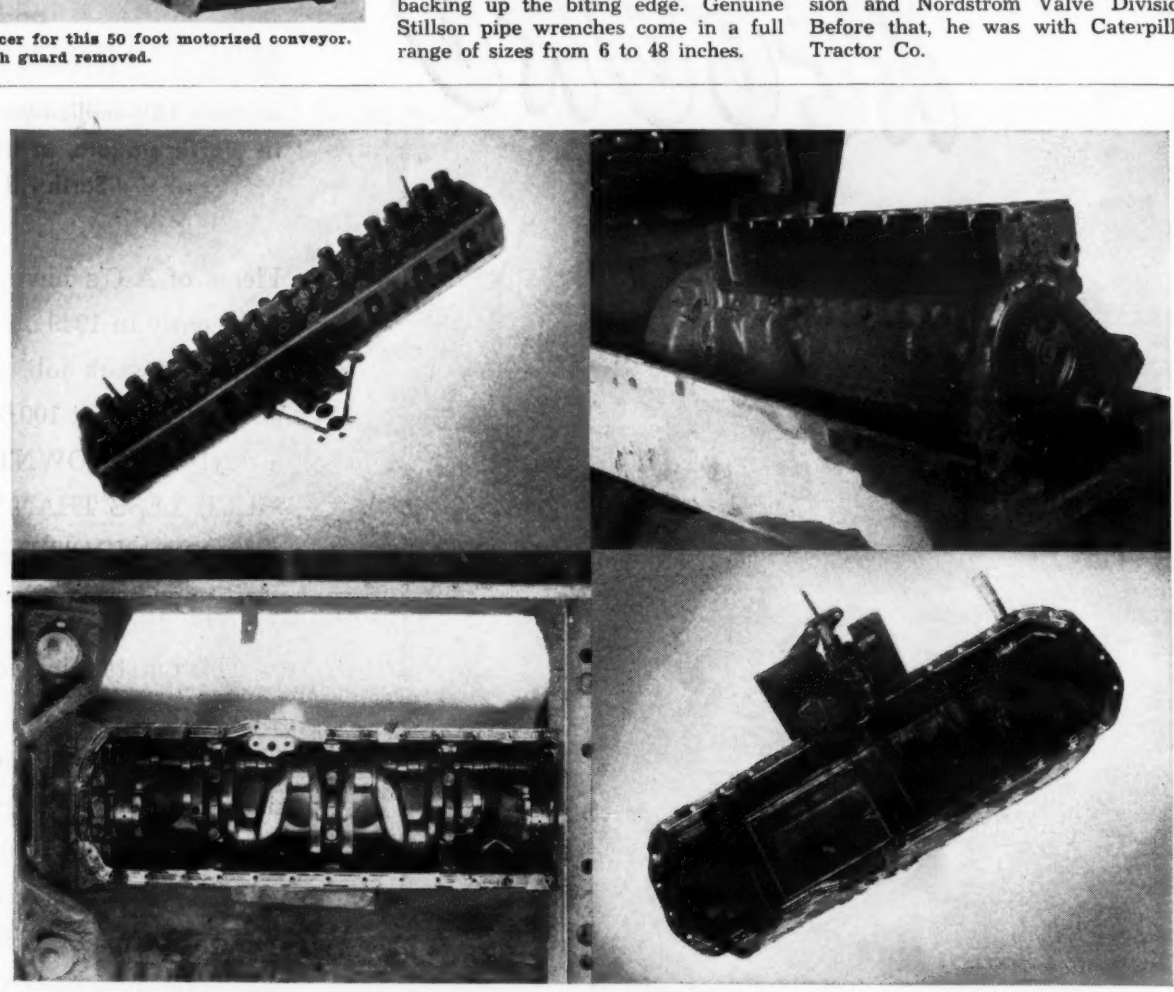


The 1950 Genuine Stillson pipe wrench retains all the design of the old Stillson, but with a new special coating to resist rust and corrosion.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 38.

McIntyre Comes to Malsbary

A. E. McIntyre has joined Malsbary Mfg. Co., Oakland, Calif., maker of steam cleaning equipment, as General Manager in charge of all functions of the business. He used to be with Rockwell Mfg. Co. as General Manager of the Pittsburgh Equitable Meter Division and Nordstrom Valve Division. Before that, he was with Caterpillar Tractor Co.



After 122,000 tough miles, engine looks like this . . .

● These bus engine parts have seen over 122,000 miles of hard service. They have not been cleaned but are shown exactly as they came from the engine. Nevertheless, they are entirely free from deposits that would interfere with satisfactory operation.

Here is visible evidence of superior lubrication by STANOLUBE HD Motor Oil. The benefits of this lubrication have meant important savings for the Arrow Coach Lines, Ottumwa, Iowa. Mr. Robert Galpin, manager, reports: "We started using STANOLUBE HD Motor Oil in our 17 buses in September, 1945 and since that time have *doubled our engine life* (between complete overhauls). We attribute this largely to cleaner-running engines."

The advantages offered you by STANOLUBE HD go hand in hand with the benefits of an automotive engineering service that's unique in the Midwest. The Standard Oil Company has located practically at your doorstep a specially trained and experienced lubrication specialist. This man will give you an "on-the-spot" engineering service that's vital to fleet operations. His headquarters are the nearest Standard Oil Company (Indiana) office. You can obtain his assistance by contacting that office or writing: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

Stanolube HD Motor Oil

STANDARD OIL COMPANY (INDIANA) STANDARD

Hot-Mix Widening Relieves Traffic

Bad Bottleneck Between 4-Lane Sections Eased by Widening To 36 Feet With Pavement of Asphaltic Concrete

+ THE narrow pavement between Provo and Lehi, Utah, has been a source of ever-increasing concern to state highway officials, because it is joined on both ends by a 4-lane modern highway capable of carrying large volumes of traffic. When the high traffic count reached the narrow 2-lane road, drivers became impetuous and there were some serious accidents.

A 6.7-mile piece of this highway, carrying U. S. 89, 50, and 91, has now been rebuilt despite an embarrassing shortage of funds with which to do the work. The necessary widening and construction of granular sub-base was done previously by state maintenance forces, and now a new hot-mix asphaltic-concrete pavement 36 feet wide has been laid over the highway by contract. W. W. Clyde & Co. of Springville, Utah, had a $99,910 contract with the Utah State Road Commission, and it was expected that necessary extras would up this contract figure by about 10 per cent.

H. J. Corleissen, one of Utah's Road Commissioners, explained the necessity for the work by saying, "We have a new 4-lane highway between Provo and Lehi all located, but if we built it at this time it would take all the money we have for construction throughout the state. Naturally we can't afford to neglect the rest of the state. So we're doing the best we can: widening this highway to 36 feet. That will relieve the traffic situation, and let us get by until we can build the other highway."

Clyde's contract called only for work incidental to asphaltic-concrete paving. It included such items as 24,000 tons of plant-mix surfacing, prime and seal-coat asphalt, rolling, and the control of traffic. The 6.7-mile job was broken in two parts, because it did not include the main street of American Fork, Utah, a small city near the center of the project.

Design of the Work

The original highway through this part of Utah was a narrow concrete slab, which has since been widened, patched, monkeyed with, worked on, and fussed over so much that it has lost much of its original identity. Eventually the concrete pavement got widened to 26 feet, but even that was insufficient to handle the high volumes of traffic pouring in from both ends.

Maintenance forces, working under Commissioner Corleissen and State Highway Engineer Roy W. McLeese, cleared the shoulders and put a 5-foot widening strip on each side of the pavement. This work was done in the spring of 1949, and was completed just before Clyde moved in on July 14. The W. W. Clyde outfit is a fast-moving force, and it was perhaps fortunate that the state work was finished well on time, because Clyde had only 75 days in which to finish his activity.

C. & E. M. Photo

A general view of W. W. Clyde's 2,000-pound Cedarapids ashalt plant—comparatively new at the time of the Provo-Lehi job in Utah.

Crushed rock was used for widening. It was laid in a shallow trench 6 inches deep. After being watered and rolled, it was left smooth ahead of Clyde's men. The contractor, when he moved in, had basically a 26-foot strip of portland-cement concrete to cover, with 5 feet of crushed rock on each side, to

(*Continued on next page*)

¾ TON WINCH

This Hand Winch is ideal for moving and installing heavy machinery, loading trucks, hand derricks, cranes, gin poles, loading logs, sawed lumber, loading implements on trailers, hoisting silage, pulling wells, etc. Can be bolted anywhere and operated in any position. Made of electric steel; bronze bushed; 2 speeds, 8.16 to 1 for heavy loads.. 3 to 1 for fast operation ... self locking to hold loads at any position.

$30 LESS ROPE

Overall Dimensions 12⅛ in. x 7⅛ in. x 7 in. Handle 10 in long. Drum size 3 in. dia. x 6 in. long x 6 in. dia. flanges. Will hold 100 ft. ¼ in. Wire Rope. Illustrated with 50 ft. ¼ in. Wire Rope. Shipping Wt. 37½ lbs. GUARANTEE —Five-day return privilege.

$39.50 WITH 50 FT. of ¼ in. WIRE ROPE

Send remittance with order and we prepay postage

GOLD FOUNDRY & MACHINE WORKS

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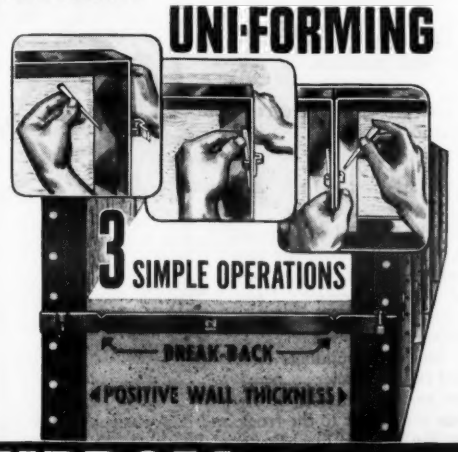
UNI-FORMS form BIG areas faster...

save labor...save materials!

LINED AND BRACED ON 1 SIDE . . . LEAVES UNOBSTRUCTED WORKING AREA ON OTHER SIDE.

VERSATILITY—EVERY CONCEIVABLE WALL DETAIL... UNI-FORMED

UNI-FORMING



Faster erection . . . automatically accurate wall widths . . . minimum 1 side alignment and easy adaptability to any forming requirement makes UNI-FORMING the most economical method of forming any type of concrete.

You can form bigger areas, using less man hours and materials with UNI-FORMS . . . steel-framed UNI-FORMS comprise a tight, rigid form that requires no additional structural members.

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UNIVERSAL

Form Clamp Company

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Hot-Mix Widening Relieves Traffic Jam

(*Continued from preceding page*)

be topped by asphaltic concrete.

Because of the difference in types of footing, two prime-coat asphalts were specified: RC-4 at the rate of 0.1 gallon per square yard on the concrete; and MC-1 at the rate of 0.5 gallon per square yard on the granular material.

Over the top of this somewhat rough and uneven surface there was laid a leveling course of hot-mix 1½ inches thick, topped out by a 2-inch upper course. The leveling course was laid by a motor grader, while the top course was placed by a Barber-Greene Finisher. A seal coat, with armor chips, tops the pavement, and even though the future 4-lane route is built on a new location in the next few years, this present highway will accommodate much inter-city traffic for a long time.

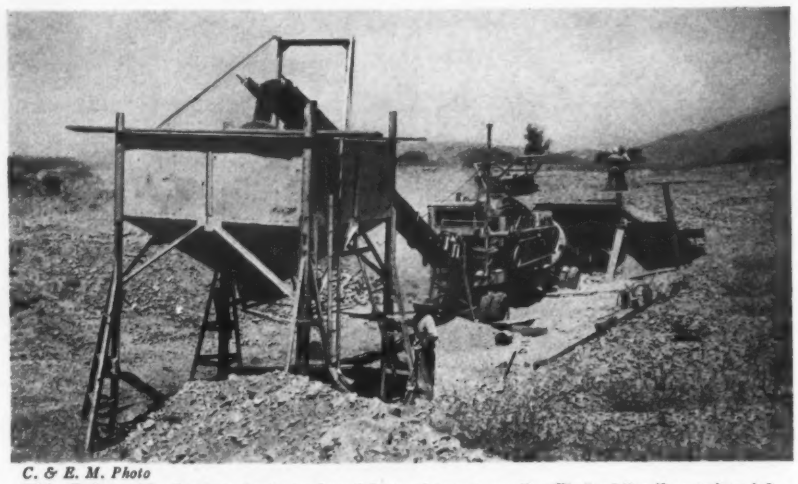
Clyde Sets Up a Hot Plant

The erection of a Cedarapids 2,000-pound asphalt plant was one of Clyde's first activities. The plant was comparatively new, having done a job in Nevada and another near Roy, Utah, before moving down to the present set-up.

The plant consists basically of a cold elevator, a drier, pugmill, sizing screens, and such auxiliary equipment as a steam boiler, asphalt and fuel tanks, and driving engines. The plant itself is driven by a General Motors diesel engine, while the drier is driven by a Caterpillar D4400 diesel. The boiler is used to operate only limited heating of the far end of the drier, and it heats the steam coils in the asphalt tanks. The pugmill gate ram, various levers, and other controls sometimes operated by steam are operated on this plant by compressed air or hydraulic pressure.

The boiler is an old horizontal locomotive-type rig, of 125 hp, and is mounted on skids to make it portable. No. 5 fuel has been used for some time, but a change to a lighter grade is contemplated for the future.

There are two horizontal asphalt tanks, one holding 6,000 gallons and the other holding 4,000 gallons. Both tanks are heated by boiler steam, and there is also a Cleaver-Brooks retort handy just in case additional heat is required on the tanks or in the unloading of fresh asphalt. The 6,000-gallon fuel oil tank is also heated lightly by steam.



C. & E. M. Photo
This Cedarapids Junior plant produced hot-mix rock on the Clyde 6.7-mile paving job.

The asphaltic cement used for this project was a 120-150 penetration material, produced at the Salt Lake City refineries of Wasatch Oil Co. The Clyde organization used two 3,000-gallon truck-mounted tankers to haul the material, at pumping temperature, from Salt Lake City. The transports unloaded their asphalt by gravity from an earth ramp built up to the top level of the tanks. From that point on it was pumped from the ready tank in a continuous loop past the hot pot at the pugmill, by a Kinney 2-inch asphalt pump.

Aggregates consisted of a hard sedimentary formation in a pit centered around the asphalt plant. In relation to the project, the plant had a ½-mile dead haul, was 2 miles from the south end and 5 miles from the northerly extremity. The finished product had to be hauled that distance.

Vernal Sand & Rock Co. produced the aggregates, under Clyde's supervision. The company used a Cedarapids small portable crusher and sizing unit, driven by a Caterpillar engine. Raw pit-run material was fed through a trap to the machine by an Allis-Chalmers HD-10 tractor-mounted bulldozer.

The finished material was stocked temporarily in a 20-ton transfer hopper, from which point five dump trucks hauled it over to the Clyde asphalt plant, only a few hundred feet away. It was dumped nearby, and handled from that point by a D8 Caterpillar-mounted dozer. This machine fed the material into a feeder hopper at the hot plant.

The bucket-line cold elevator took the rock from the feeder hopper, and hoisted it up to the intake chute over the single plant drier. Here the rock was heated, to remove the last bit of inner moisture. It passed from the drier to the 17-foot-high hot elevator, which hoisted it to the screens.

The screens were composed of two flat vibrating decks, 3 feet wide x 10 feet long. The top deck was covered with 5 feet of ½-inch mesh, and 5 feet of 1-inch mesh, so arranged that the rock hit the ½-inch mesh screen first. This took some of the shock off the lower deck, which had 5 feet of ¼-inch mesh, 2½ feet of ½-inch mesh, with the remaining 2½ feet blank.

After the screens sized the material, it passed to the scale hopper, where it was weighed and dropped into a skip. This skip hoisted the rock to the pugmill, where a 30-second mix blended the asphaltic cement with the aggregate. The asphalt and aggregate were both weighed to obtain an accurate mix content. A 2,180-pound batch was used for this project, with an asphalt content of 4.7 per cent.

Utah's standard specifications for aggregate limit the various sizes to the

(*Continued on next page*)

Operates **ON ANY DERRICK TRUCK**

- Adjustable for clean holes to 10 feet deep
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- Easy to use—easy to transport

With the Tel-E-Lect Digger, you can drill a hole for any purpose—*anywhere you can spot a truck derrick.* Used by contractors for drilling telephone and power poles... pier holes for buildings ... guard rail post holes... many other uses. A single bolt attaches the digger to the truck and it works suspended from the derrick line. Powered by the truck motor through a power take-off shaft, the Tel-E-Lect is raised and lowered by the winch line. A low cost all-purpose digger. *Ask for circular.*

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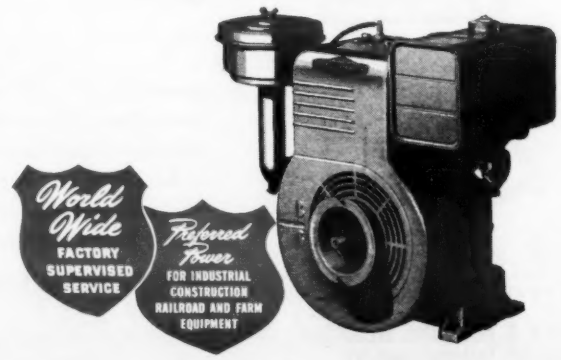
Milwaukee 1, Wisconsin, U.S.A.



following tolerance:

Size Screen	Per Cent Passing
1-inch	100
¼-inch	85-100
No. 4	45-65
No. 10	30-50
No. 200	5-10

When this magazine's western editor visited the project, 5 dump trucks were handling what material the plant put out, hauling six batches per trip. The work was going on at the south end of the project. Later, it was planned to increase the number of trucks. Each truck driver did whatever body oiling was necessary, and transferred his load ticket to the dump inspector when he reached the point where material was being placed.

With another job about ready for hot-mix, Clyde put the plant on a 16-hour basis to hurry the tonnage to completion, so he could move the plant equipment up to Logan Canyon. Up in that country, the story goes, the Mormoms are so tolerant of hot plants without dust collectors that they never appear even mildly interested in the operation. At the Pleasant Grove location, however, a few people with nervous tension occasionally asked, "Do all hot plants put out this much dust?"

Fortunately, only half of them asked it at a time, or it might have become a problem. The eastern half asked it when a west wind was blowing, and vice versa.

Laying the Hot-Mix

No great amount of preparation work was necessary prior to laying the hot-mix pavement. That had already been done by state forces. The surface to be primed was shot ahead by an Etnyre 1,200-gallon pressure distributor. Because of the traffic condition, state inspectors tended to restrain the contractor's men when they became too enthusiastic and primed too far ahead. One 2,000-gallon load went a long way, however.

The priming was generally done in such a way that traffic could use the shoulders, or the unprimed half of the road on the opposite side. The minimum amount of prime curing was 24 hours, and the longest was approximately a week.

The hot-mix was first placed in a leveling course, with an average compacted thickness of 1½ inches. It was dumped or "tail-gated" direct to the grade, according to a distance marker established by the dump man. In fact, each driver ticket contained information as to the feet and tenths the load would cover.

The leveling course was laid 18 feet wide, by dumping the material in the approximate center of that strip. It was spread in four passes by a Caterpillar motor grader, using a wing on the ends of the blade to maintain a smooth line at the pavement edge. Rolling was done by a two-axle tandem Buffalo-Springfield 12-ton machine.

Leveling-course material laid one day was not added to the next. Instead, operations were transferred back, to bring the other half up. Pavement was maintained at all times in as much of a closed sequence as possible, because of a certain hazard to traffic.

The top-course material was laid by a Barber-Greene Tamping-Leveling Finisher, working three 12-foot strips to obtain the 36-foot overall width. The machine stayed on line with the aid of survey points and red flagging, joined by a string line. After the first lane, of course, the machine worked to the previous edges.

C. & E. M. Photos

On the Provo-Lehi road, a 1,200-gallon Etnyre distributor mounted on a Federal truck shoots prime coat ahead of hot-mix operations (above). At right, a Caterpillar motor grader levels the dumped hot-mix.

The paving crew at the Barber-Greene machine consisted of an operator, an oiler who was also the screed man, and one truck spotter. Little raking was necessary, and the job ordinarily detailed to a street boss was handled by Superintendent Frank Jensen, who watched over the entire project.

Clyde has a finisher operator who is unusually proficient at making longi-

(*Concluded on next page*)

DAVEY COMPRESSORS

ONLY COMPRESSOR WITH PERMANENT PEAK EFFICIENCY LIFETIME VALVES

DAVEY COMPRESSOR CO. KENT, OHIO

Brand New!

TWO PURPOSE ELECTRODE

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SOUND BUILD-UPS

HIGH STRENGTH WELDS

Why stock two types of manganese electrodes when the new STOODY MANGANESE does double duty? This brand new electrode is an exceptionally *good build-up rod;* at the same time it possesses all qualities for *high strength welds!* Deposits are Austenitic with full Hadfield properties. STOODY MANGANESE costs no more—eliminates separate manganese stocks, does *all* jobs requiring a nickel manganese electrode and does them *better!* Try 50 lbs. today—available from any Stoody Dealer. Folder sent on request.

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LOW PENETRATION
EXCELLENT BRIDGING QUALITIES
FABRICATED ELECTRODE ...BARE FOR DC... COATED FOR AC-DC

TYPE OF ROD	SIZES
Bare — for DC Electric Application	5/32" x 14"
	3/16" x 14"
	¼" x 14"
Coated — for AC-DC Electric Application	5/32" x 14"
	3/16" x 14"
	¼" x 14"

Hot-Mix Widening Relieves Traffic Jam

(*Continued from preceding page*)

tudinal joints. By crowding his machine a little, he leaves a small raised ridge at the joint about ½ inch high. Rakers are not present to touch this ridge, and the roller operator hits that first. The roller presses the excess material down into the voids at the joint, resulting in a bond which is hardly visible to the eye.

An excellent laydown job, coupled with a good seal coat, rapidly made of this former bottleneck a much-improved roadway, capable of carrying more than twice the traffic it formerly could. After the contractor moved out, state maintenance men bucked up the narrow shoulders with a motor grader, and a striping machine marked off the 36-foot pavement. There is a double center line, with a 10-foot main lane and an 8-foot outside lane. The shoulders are narrow, admittedly, but the maintenance men got as much width as possible under the circumstances.

Personnel

The project, built entirely with state funds, was supervised generally by Roy W. McLeese, Chief Engineer of Utah, with Rube Simpson as Resident Engineer. Frank Jensen was Superintendent, with Norm Chivers in charge of the hot plant.

Prime-Mover Engine Chosen by Customer

A new plan under which customers may have their choice of engine when ordering the C Roadster Tournapull is announced by R. G. LeTourneau, Inc., Peoria, Ill. This prime mover for 16-ton Carryall scrapers, Tournarockers, and Tournahoppers is now available with either a General Motors 6-71, Cummins HBI-600, or Buda 6-DC-844 engine.

At the same time, the C Roadster is now built for operation at a higher top speed. It has a heavy-duty five-speed transmission with a top road speed of over 30 mph in fifth gear, according to the company. It has the four working speeds previously available (ranging from 3.0 to 19.8 mph) plus the high return speed, which, LeTourneau points out, can be used to good advantage in cutting down cycle time on many jobs.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 4.

Tractor Side Mower

A power mower attachment for mounting on Farmall H and M tractors; John Deere A and B tractors; Allis-Chalmers WC and WD tractors; Massey Harris 101 Jr. and Sr., 30 and 44 tractors; and Oliver 60, 66, 70, 77, 80 and 88 tractors is offered by the Kosch Mfg. Co., of Columbus, Nebr. This mower, equipped for hydraulic or manual lift, is mounted on the side of the tractor to provide full visibility of mowing operations at all times.

The unit is available with a 6 or 7-foot heavy-duty cutting bar and two knives. A special "spring-back" feature is designed to avoid breakage when an obstacle is hit. When the cutting bar strikes an object, a 1½-ton preloaded compression spring eases back the bar, and at the same time a connecting cable automatically disengages the foot clutch.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 52.

Hydraulic Power Control

The Dyna-Might electric-power hydraulic control is illustrated in a circular recently issued by the Monarch Road Machinery Co., 327-329 Front Ave., N. W., Grand Rapids 4, Mich. Designed to provide fast, dependable, automatic operation for snow plows, road machinery, and similar equipment, the unit develops 1,500-psi pressure and will deliver approximately 1 gpm. The circular explains that both the HEP self-contained unit and the standard HE model is one-man cab-controlled. The HEP mounts complete next to the operator, while the Type HE fits under the hood, on the engine panel, or wherever convenient. Each model is complete in one kit and ready for easy installation.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 89.

Booklet on Wire Rope

A new 12-page pocket-sized booklet describing CenterFit wire rope is announced by Jones & Laughlin Steel Corp., Pittsburgh 30, Pa. The booklet contains complete technical data and is illustrated with J&L's cartoon character, the wire-rope man. Included are summaries of various successful field applications of CenterFit on clamshells, shovels, draglines, bulldozers and scrapers, and industrial hoists.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 2.

PORTABLE LIGHT PLANT AND FLOODLIGHTS

COMPLETE WITH GENERATOR AND POWER PLANT

Mounted on 1½-ton Standard Chevrolet truck with 4-wheel drive. LeRoi generator, driven by 22 hp LeRoi engine develops 281 amps., 32 volts DC, at 1200 rpm. Bank of 6 floodlights, complete with pilot lights at top. Unit can be readily adapted for use as a portable generator. Trucks have very low mileage. Six on hand—units are in like-new condition and would cost approximately $6000.00 at today's prices.

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LIKE NEW CONDITION

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Most Powerful Chevrolet Trucks Ever Built!

Plenty of power—and dependable power—to handle heavy loads at lowest cost! Two great engines bring you new power, new stamina, new and spectacular performance with economy. These 1950 Chevrolet P•L trucks are the most powerful trucks Chevrolet has ever built.

In performance, popularity, payload and price, Chevrolet is the outstanding leader! Chevrolet is the nation's choice for every trucking job . . . and on each job, these P•L trucks have established their right to leadership by years of outstanding service.

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Far ahead with all these PLus *Features:*

• TWO GREAT VALVE-IN-HEAD ENGINES: the New 105-h.p. Load-Master and the improved 92-h.p. Thrift-Master—to give you greater power per gallon, lower cost per load • THE NEW POWER-JET CARBURETOR: smoother, quicker acceleration response • DIAPHRAGM SPRING CLUTCH for easy action engagement • SYNCHRO-MESH TRANSMISSION for fast, smooth shifting • HYPOID REAR AXLES—5 times more durable than spiral bevel type • DOUBLE-ARTICULATED BRAKES—for complete driver control • WIDE-BASE WHEELS for increased tire mileage • ADVANCE-DESIGN STYLING with the "Cab that Breathes" • BALL-TYPE STEERING for easier handling • UNIT-DESIGN BODIES—precision built.

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P*ayload L*eaders The rugged construction and all-around economy of Chevrolet P•L trucks cut operating and repair costs—let you deliver the goods with real reductions in cost per ton per mile.

P*rice L*eaders From low selling price to high resale value, you're money ahead with Chevrolet trucks. Chevrolet's rock-bottom initial cost—outstandingly low cost of operation and upkeep—and high trade-in value—all add up to the lowest price for you.

CHEVROLET

Solid all-covered and closed-in construction to protect sensitive parts marks the European surveying instruments distributed in this country by Norbert Dienstfrey.

New Equipment Line For Surveying Work

A complete new line of surveying instruments has recently been introduced in this country by Norbert Dienstfrey, 478 Water St., New York 2, N. Y., American distributor for Fennel & Sons, of Kassel, Germany. These modern instruments are lightweight, totally enclosed, climate-proof units designed for both rugged construction duty and high-precision geodetic work.

The new line includes transits, levels, theodolites, and charting instruments, plus accessories such as plumb bobs, rigid bobs, rods, steel tapes, tripods, and optical plummets for centering transition theodolites, and tacheometers.

Principal instruments in the line are seven of the transits; seven types of levels in three different sizes; and the new auto-reduction Hammer-Fennel tacheometer. The 4-inch transit, with readings to 15 seconds is available with either the inverting eyepiece and three footscrews, or an erecting eyepiece and four footscrews. A 5-inch transit in the line has a micrometer-microscope giving indications of 2 seconds. With the newly developed 3.6-inch transit, an internally reading eyepiece adjacent to the telescope eyepiece enables the user to read the horizontal circle without changing his position. Two others in the line are a 5⅛-inch transit, of American design, and a suspension theodolite for mine and tunnel work.

A small-size dumpy level, two engineers levels, and a high-precision level for optimal accuracy are offered. The first two of these are available either with or without a horizontal circle. The engineers level may be obtained in both American and European designs. The coinciding spirit bubble may be observed through the telescopes of both instruments.

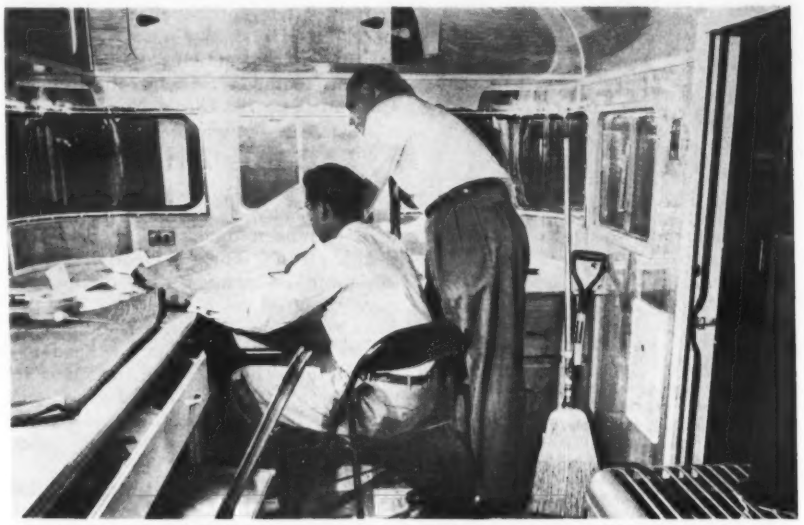
Further details may be secured from Norbert Dienstfrey. Or use the Request Card at page 16. Circle No. 148.

Full Line of Vibrators

An illustrated 4-page catalog presenting the full line of vibrators made by the Viber Co., 726 S. Flower St., Burbank, Calif., has recently been issued. First in the line is the Model E electric vibrator, powered by a Viber universal 1¾-hp motor, for 115 or 230-volt ac or dc operation. Second is the Model P pneumatic vibrator powered by a Viber vane-type motor and operating on approximately 100 pounds of air pressure at the throttle. Third in this series of standard interchangeable units is the Model G gasoline vibrator powered by a 4-hp single-cylinder four-cycle air-cooled engine.

Vibrator heads, with a splash-system oil bath which lubricates the bearings, are interchangeable on all models and available in 1¾, 2⅛, 2½, and 3-inch models. Rubber-tipped vibrators are standard, to reduce damage to forms and form lining materials. Other products presented in the bulletin include the PX-6 pneumatic external vibrator for applications on steel forms, a laboratory model No. 11 for test cylinders and beams, and a heavy-duty model No. 60 for mass concrete.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 91.



Engineers who visited the first annual National Trailer Coach Industrial Exhibit held recently in Washington, D.C., found a mobile field office on display by the Universal Trailer Corp. of Chicago and Paramount, Calif. The trailer coach contains desk room for three or four men, plus storage space in the rear. For further information, use the Request Card at page 16. Circle No. 70.

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Flexible Shaft
VIBRATORS
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FLEXIBLE SHAFT EQUIPMENT
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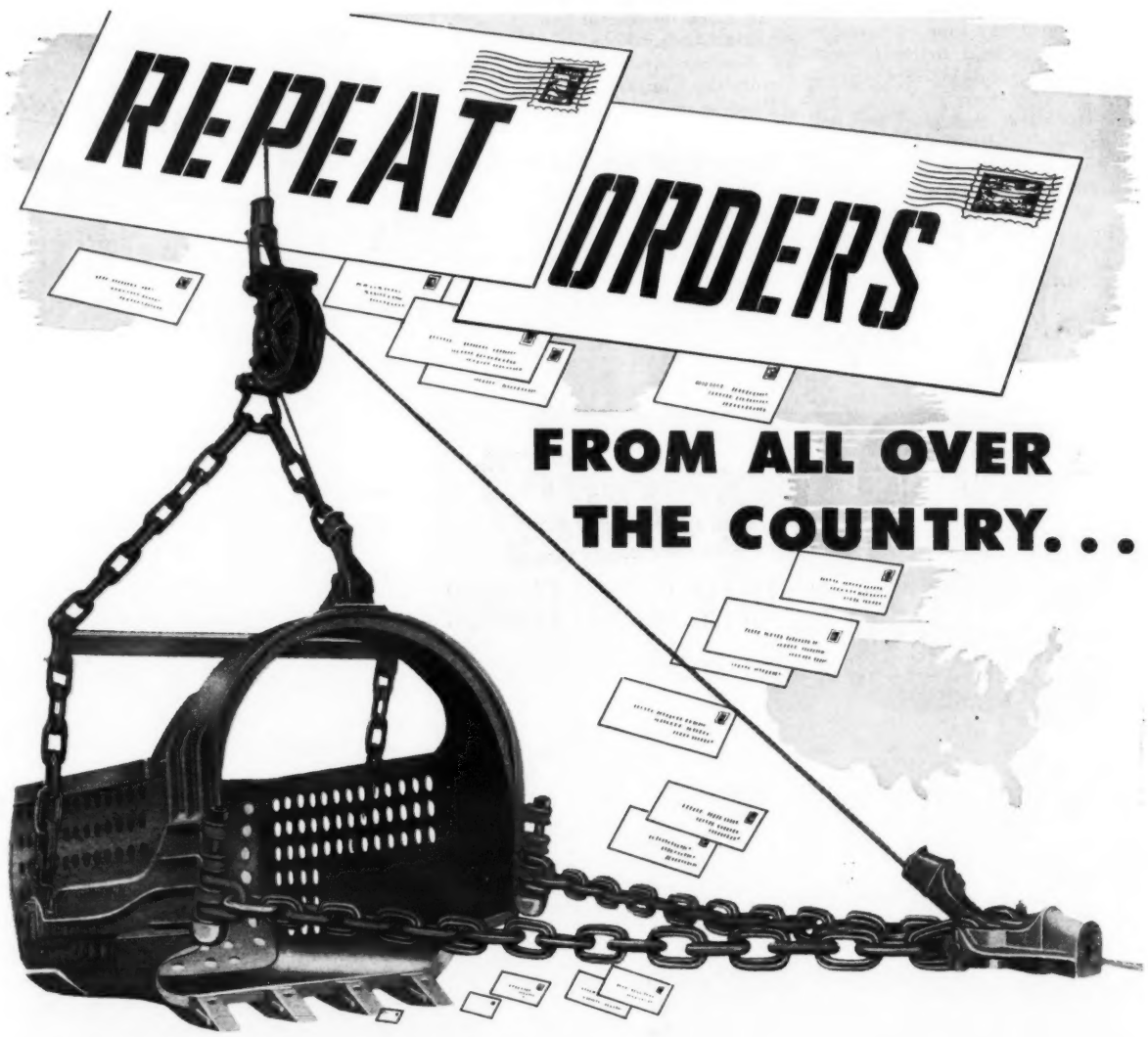
Use "Messenger" Service



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FOR EVERY DIGGING PURPOSE

3/8 to 40
CUBIC YARDS

The large percentage of "repeat orders" for Hendrix Dragline Buckets are real evidence of satisfaction. Their outstanding performance of deliverying more pay dirt at lower cost makes them the first choice of progressive producers. Hendrix Buckets are engineered and designed to give years of low-cost, high-profit operation with the minimum of maintenance. Repeat orders *prove* Hendrix Buckets are best!

HENDRIX Lightweight DRAGLINE BUCKETS

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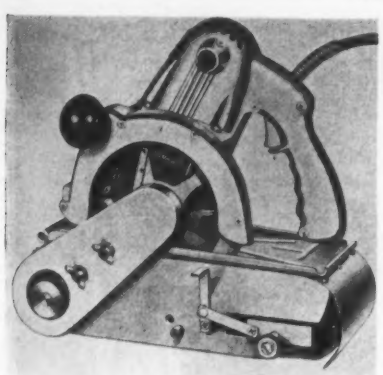


The Cummins Model 650 Sander-Saw is a 4-inch belt sander which converts to a 6-inch portable saw.

Sander and Saw

The new Model 650 Sander-Saw, a 4-inch belt sander quickly convertible into a 6-inch portable saw, has recently been announced by Cummins Portable Tools, Division of Cummins Business Machines Corp., 4740 Ravenswood Ave., Chicago 40, Ill.

Weighing 18 pounds and properly balanced for easy operation, the Sander-Saw does almost any kind of surfacing job. The belt is held under constant spring pressure and centers on the pulleys. An easy-to-use tension latch provides for quick change of the belt. Belt alignment is adjusted by means of a small knob at the left rear of the unit.

The 6-inch saw is adjustable for bevel cuts to any angle up to 45 degrees and to any depth from ¾ to 1⅞ inches for pocket and straight cutting. Designed as a general-purpose tool, with a speed of 4,200 rpm, the saw is recommended by Cummins for ripping and cross-cutting 1-inch lumber and for intermittent sawing of 2-inch dressed lumber.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 55.

Portable Drill Press

A portable drill press designed for use with any ⅜ to ½-inch electric drill has been developed by the Sudenga Iron Works, George, Iowa. Weighing 26 pounds, this drill press may be used as a shop tool on the workbench, or may be dismounted to secure drill-press action in hard-to-reach spots. The electric drill is held in place by a patented clamp. Leverage is provided by anchoring the steel chain and applying pressure on the lever arm.

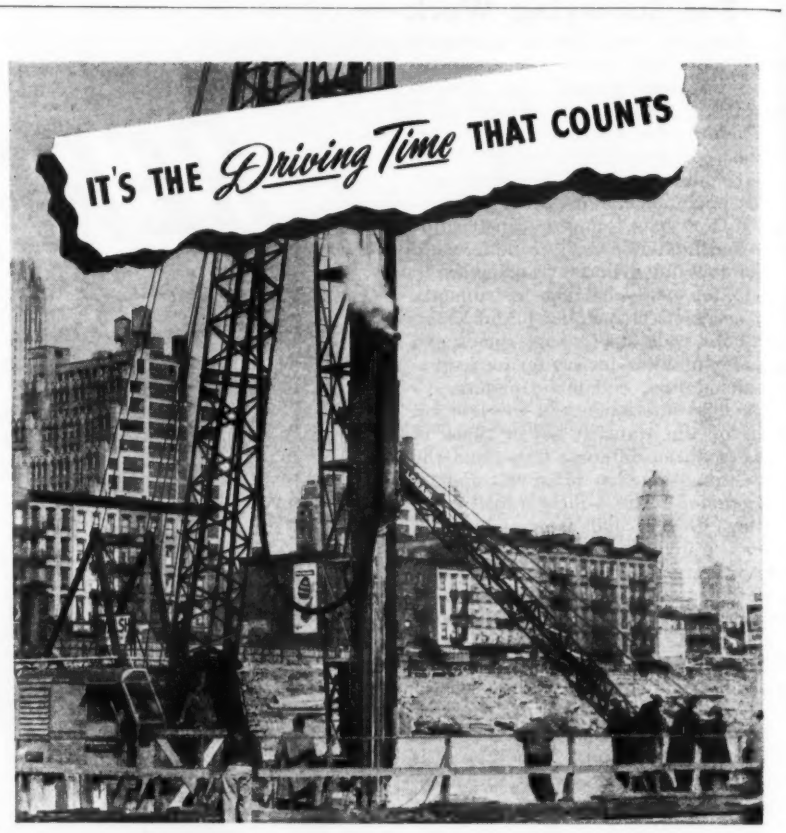
The adjustable lever action on the Port-A-Drill is designed to make it applicable for all hard-to-reach hand drilling. The height of the unit is adjustable from 27 to 35 inches. The base plate is approximately 9 x 11 inches and there are holes in the drill base for securing the drill on a workbench. There are also slots for securing work on a drill vise. The drill bit guide is adjustable.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 79.

Kinney Office in Los Angeles

Kinney Mfg. Co. of Boston, Mass., is opening its new Los Angeles office this month at 3942 W. Slauson Ave. The building was designed especially for the sale and service of Kinney vacuum pumps, liquid rotary pumps, and bituminous distributors. Roy A. Woltman is in charge.

An adjustable lever action on the Port-A-Drill drill press makes it applicable for all hard-to-reach hand drilling. It can be used with ⅜ to ½-inch electric drills.



CONTINENTAL'S PILE DRIVING HOSE ELIMINATES COSTLY SHUT-DOWNS!

When pile driving hose "strips" its tube and clogs the hammer-head, the driving operation grinds to a stop. You can prevent these costly shut-downs with Continental's Pile Driving Hose. The tube is "locked" to the carcass. You just can't pull it loose without tearing the hose to pieces. Continental's Pile Driving Hose is an 8-ply, heavy-duty workhorse that *stays* on the job . . . and helps protect your profit.

* * * *

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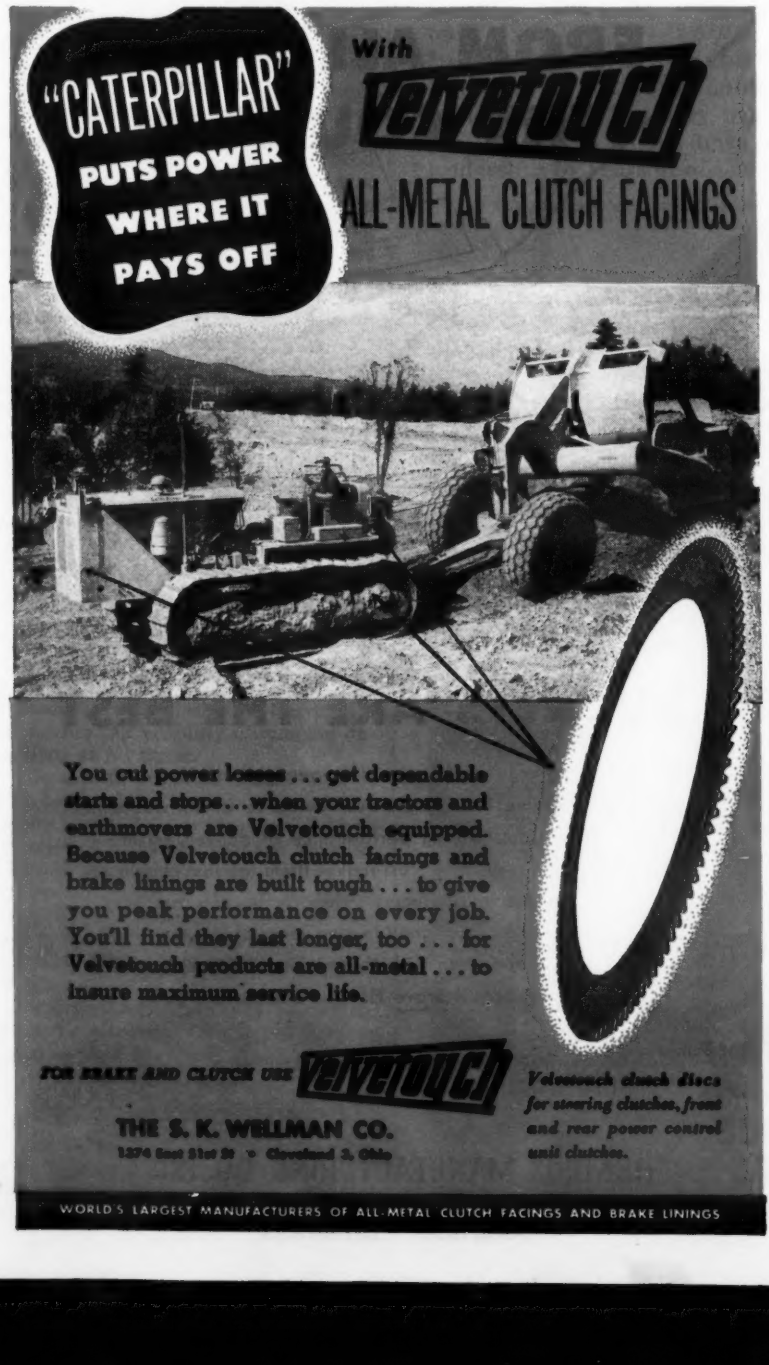
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Effective Control Of Roadside Brush

At Recent Weed-Control Conference, Specialists in the Field Reported Effective Brush Control Obtained by Low-Cost Chemical Treatment

✦ HIGHWAY men and contractors doing right-of-way clearance were top dog at the Fourth Annual Meeting of the Northeastern Weed Control Conference held recently at the Hotel New Yorker, New York City. In conferences, films, and anteroom talks, the boys really got down to the practical problems of chemical weed and brush control along our town, county, and state highways.

Of course, there was plenty of heated argument over the cost and worth of research and experimental investigations; the ability of dormant treatment to obtain good kill; whether to use oil or water as a carrier; high-pressure versus low-pressure treatment; and the old bugaboo of volatilization. All the problems weren't ironed out, but much of value came from open discussion between research investigators on the one hand and field men on the other.

The two great and conflicting problems that edged into every talk on chemical brush control were its effect and its cost. Everyone agreed that mowing and brush cutting, particularly along, in, and around structures, is one of the most costly of highway maintenance operations. What they disagreed on was whether or not chemical control can do the job as well or better, at less cost.

The men attending the conference reported that chemical control could be in many cases as effective as cutting, for practical considerations, and that it could be done cheaper. The trouble, they said, is that there aren't enough highway men working with it to see what it will do. Each area has different growths, different climate, different equipment; and therefore different problems and results. But it has been demonstrated, and stated in various progress reports, that this method is effective and economical. The unfortunate aspect is that some of the people trying it for the first time have had bad results—poor kill, high cost, added cost by claims of drift damage. It was pointed out at the conference that these problems can be overcome with the investment of a little time and money. This is certainly worth while if the cost of mowing and cutting can be reduced and the saving channeled into other badly needed maintenance work.

Treatment Methods

A report delivered by L. L. Coulter, of the Dow Chemical Co., indicated successful results with dormant treatment. The first thing to realize, he said, is that if successful dormant treatment can be developed—it is still in somewhat experimental stages—then you can use your equipment the year round. The basic difference between winter and summer spray is the necessary increase in concentration, since the former is essentially a bark treatment.

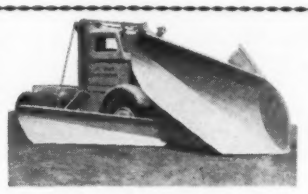
Though good results have been obtained with a water carrier, Mr. Coulter pointed out that oil is more consistent. Base spraying is apparently as effective as overall spraying, provided there is adequate coverage, and temperature seems to have little effect on the result. He mentioned doing work at 12 degrees below zero. Rainfall during or shortly after treatment also seems to have little effect. Where mixtures were used, the effective kill was proportional to the amount of 2,4,5-T, he reported. Another advantage of chemical treatment which Mr. Coulter brought out is the retention of leaf litter and undisturbed grasses, as contrasted to their removal with heavy cutting and rooting equipment.

H. H. Iurka, Landscape Architect, New York State Department of Public Works and Dr. A. M. S. Pridham of Cornell University reported that during the 1949 season, field tests were set up in New York for using various herbicidal sprays and dust in order to: (1) eliminate all plant growth for a period of six weeks or more; and (2) restrain all plant growth to a height of 18 inches or less for a period of six weeks or more. A brief summary of the results cited by the authors, and appearing in full in the printed proceedings of the conference, indicate: top kill of all vegetation, without resprouting during the summer, with application of Atlacide, Polybor chlorate, sodium chloride, and sodium trichloroacetate. Seedling growth in late autumn suggests the probable need of yearly treatment. Treatments leading to the control of grasses must be reinforced with chemicals that will kill or control tall-growing broadleaf weeds. Preliminary tests under actual highway operational procedures gave satisfactory results without injury to guardrails, sign posts, or markers, the authors reported.

J. Harrington Nicholson, of Nicholson-Gaylord Co., Inc., Richfield Springs, N. Y., presented a paper at the afternoon session outlining the features of high-pressure spraying of roadsides. Mr. Nicholson expressed the belief that high-pressure equipment is definitely a must for treatment of standing brush. He gave several reasons for this belief, based on hundreds of miles of chemical brush-control work done by his firm.

"First," Mr. Nicholson pointed out, "most of the brush rows to be sprayed on local roads, where the need for brush control is most acute, are cov-

(*Concluded on next page*)



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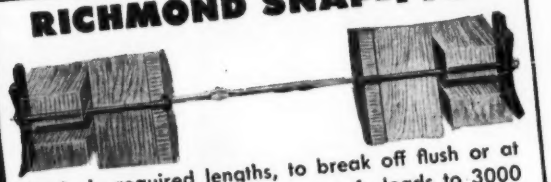

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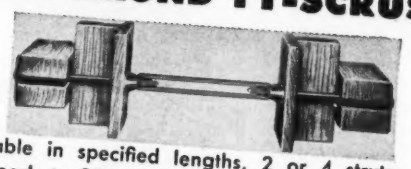

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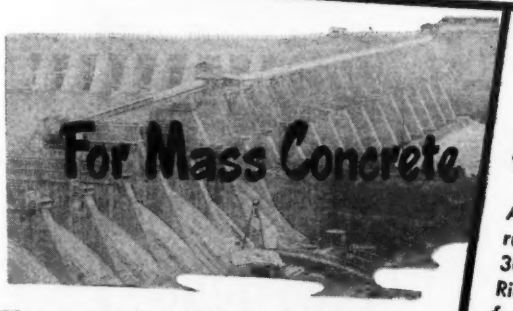

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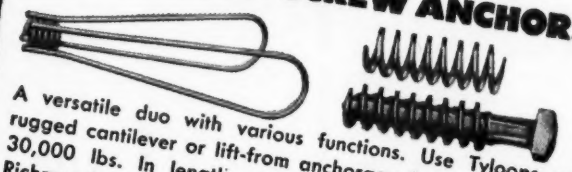

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ered with a film of dirt and dust. It takes high pressure to knock off this dust and get to the leaves and the bark. Second, a good many of the brush rows are 6 to 20 feet high and 3 to 15 feet deep. Here again it takes high-pressure equipment to reach the farther end of the row and give the coverage necessary to obtain maximum kill. Third, in the spraying of roads and highways we also want to kill poison ivy, ragweed, briars, and similar nuisance plant life. We need power to get through to these species behind and below the brush row. Fourth, and perhaps most important of all, is the time element. Even with high-pressure equipment it is impossible to cover more than 2 or 3 miles of highway per hour. With low-pressure equipment it would take three to four times as long to cover the same area."

Speaking about the one definite disadvantage of using high-pressure equipment—drift—Mr. Nicholson said: "We have been able to minimize this to a great extent by early spring spraying. That is, spraying before the farmers and gardeners have planted, or at least before the crops have begun to sprout. Another way is to pick your danger spots and spray these on a calm day, keeping your equipment carefully controlled."

Panel Discussion

The panel discussion on chemical brush control offered some straight-from-the-shoulder answers to questions from the floor. First of these was: "What volumes of carrier are used for high-pressure and for low-pressure spraying?" The panel thought that with a water carrier, 200 to 250 gallons per acre are generally used for power equipment and 25 to 40 gpa for knapsack. With an oil carrier these quantities are reduced to 50 to 75 gpa and 8 to 10, respectively.

Another question: "Does rapid foliage kill decrease the completeness of the kill?" Yes, all agreed, since the scorching effect and subsequent lack of absorption and translocation inhibit complete kill. Answer to the question whether or not volatilization results in damage to adjacent areas was that it probably does, since in some cases which have been taken to court the claimant won. There seems to be little difference in degree of drift between 350 and 100-psi pressure, but the volatilization between the esters and the amines does vary. In one case about 190 feet for the esters and 40 feet for the amines were suggested as the effective distances. This is probably because of the differences in their permeability. The volatilization effect will vary between different plant life. That is to say, tomatoes, which are very sensitive to 2,4-D, might well be more affected than corn growing at equal distance from the roadside.

More Study Needed

The reports and talks given at the conference indicated that good results are being obtained. Almost all of the state and county highway departments recognize that herbicidal weed and brush control can be an important phase of maintenance work, but unfortunately their personnel are not always adequately informed on the subject. Where unsatisfactory results are obtained from improper use of chemicals or equipment, or lack of understanding of the problem and its solution, much is done to retard progress in the field. Further investigations and field tests are necessary for final evaluation of the several treatments available. Perhaps most important of all is the necessity of stimulating interest in the chemical brush-control work and a closer integration of the findings and results of individual departments.

Hand Saw Provides Nine Tools in One

A new type of hand saw combining nine separate tools into one has been placed in production by Geometric Saw Co., Inc., 147 Genesee St., Auburn, N. Y. The manufacturer claims that this one tool can replace all the following tools: conventional hand saw, outside square, inside square, level, plumb, ruler, straight-edge, protractor, and surface cutter such as a compass saw. It is also claimed that the Geometric Saw not only eliminates the need for a kit full of tools, it also saves time now lost by the worker in laying down one tool and picking up another, over and over again.

The precision instrument is made of high-quality hardened carbon steel, 0.004 all-way taper ground, and highly polished. The blade is locked into position so it cannot become loose in the handle. The top of the blade is a straight-edge and has a deeply etched rule on both sides. The rounded point of the saw blade is so constructed that the operator can make a surface incision. The handle itself is molded from tough Tenite II. A stainless-steel protractor is recessed in the top of the handle, opening from 0 to 120 degrees by 15-degree stages calibrated on the handle. A spirit level vial and a spirit plumb vial, precision-set at the factory, are mounted into the handle. The forward part of the handle is set at a 90-degree angle with the top of the blade, making an outside square. The end of the handle is at right angles with the top of the blade, making an inside square. The Geometric Saw is made in two crosscut models, 8 or 10 teeth to the inch, and one ripsaw model, 5½ teeth to the inch.

Further information may be secured from the company. Or use the Request Card on page 16. Circle No. 120.

The careful selection and use of good lubricants at regular intervals will keep your equipment operating efficiently and economically.

Bulletin on Taglines

A fully illustrated 16-page booklet describing tagline and magnetic-reel principles, design, installation, and operation has recently been prepared by the McCaffrey-Ruddock Tagline Corp., 2131 E. 25th St., Los Angeles 11, Calif. It points out that Rud-o-Matic taglines are made in eight different models, each designed to have sufficient pull-out of cable from the wheel and to provide the desired tensions for various sizes of buckets. Detailed drawings give dimensions of each of the units. The taglines come complete with U-bolts and clamping plates for attachment 1.

Complete instructions for installing and maintaining the taglines are included, along with recommendations for the tensions to be established with each of the different models. Similar data and instructions are given for the Rud-o-Matic magnetic reels.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 7.

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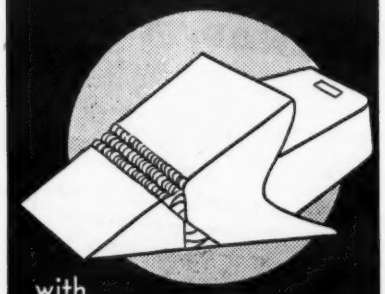

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HOW TO DO MORE WORK PER MAN . . PER MACHINE

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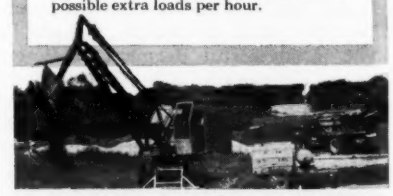
INDUSTRIAL WHEELERS

Greater speed and ease of handling make MM Industrial Wheelers the natural choice for economy handling of construction and maintenance jobs. A complete selection of attaching or pull type equipment provides a wide range of job application.

Save Time On The Job . . . On The Road . . . Deliver More Loads Per Hour.

The "shuttle gear" for fast reversing . . . "roller steering" that makes easier handling of any load . . . enable MM Industrial Wheelers to handle more loads per hour on loading and dozing jobs with less operator fatigue. New UTIL "shuttle gear" actually gives an operator a choice of *6 forward* and *6 reverse speeds*. Speeds up to 14.5 m.p.h. save time on the job as well as road time between jobs. The "straight-line" principal used in "shuttle gear" shifting eliminates slow gear shifting, doubles the time saved and makes possible extra loads per hour.



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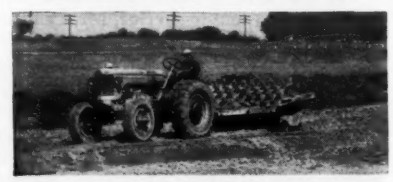

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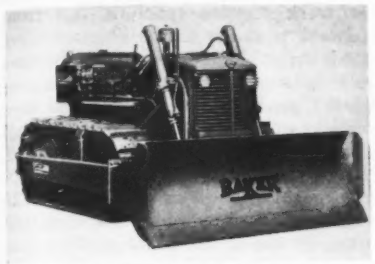

Baker has brought out a new line of bulldozers and Gradebuilders for Allis-Chalmers HD-5 tractors.

New Bulldozer Line

A complete new line of Baker bulldozers and Gradebuilders for standard and wide-gage Allis-Chalmers HD-5 tractors has been placed in production by Baker Mfg. Co., 2573 S. 10th St., Springfield, Ill. The units are controlled through twin hydraulic cylinders mounted at the front of the engine frame. Overhead height of the mounting is said to be less than that of the tractor itself. Other significant features mentioned by Baker are direct lift with a minimum of working and wearing parts; positive down-pressure; fingertip control; freedom for servicing the tractor engine without removing the bulldozer mounting; rolling-action blade shape; chrome-plated piston rods to prolong the life of rods and packings; and a protected front-mounted pump.

Both the bulldozer and the Gradebuilder are mounted close to the radiator to maintain tractor balance and stability and utilize the full power of the HD-5 tractor, the company says. Conversion from the bulldozer to the angling Gradebuilder can be accomplished with a small investment.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 110.

Data on Ceiling Design

A new 8-page bulletin showing Smooth Ceiling Systems used in numerous types of buildings has been prepared by Smooth Ceilings Systems, 802 Metropolitan Life Bldg., Minneapolis, Minn.

This system employs a special steel grillage which eliminates flared column capitals, drop panels, and beams, and reduces construction costs, according to the folder. In addition to illustrating and describing various types of construction in which Smooth Ceiling Systems may be used, the bulletin also shows test slabs with the results of various test loads. The applications include all types of flat-slab building construction.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 68.

Deacon Upped in Dayton

Since the start of this year, David H. Deacon has been Assistant Sales Manager of the Dayton, Ohio, territory of Universal Atlas Cement Co., New York City. He was formerly a sales representative assigned to the Dayton office.

Structural Fastener

The Dardelet Rivet-Bolt manufactured by The Lamson & Sessions Co., 1971 W. 85th St., Cleveland 2, Ohio, embodies the principles of both bolt and rivet in one fastening. It consists of a standard rivet head, an axially ribbed shank or grip section, and a Dardelet locking thread to which a Dardelet nut is applied. When the Rivet-Bolt is driven into a hole, the ribs are deformed somewhat and grip the plates to provide a body-bound fit. The nut locks securely when wrenched down and cannot be loosened until removed with a wrench.

In fabrication, the structural-steel connections should be pulled together with sufficient fitting-up bolts or key bolts to hold them tight. Drift pins should be driven in most cases to align the punched holes. The Rivet-Bolt is driven with a maul and the nut is then tightened with an ironworker's wrench. Rivet-Bolts will handle any work from ⅜ to 4 1/16-inch thickness and are available in ⅜, ½, ⅝, ¾, ⅞, and 1-inch diameters.

Further information on Dardelet Rivet-Bolts may be secured from the company. Or use the Request Card at page 16. Circle No. 36.

Workmen install Dardelet Rivet-Bolts, structural-steel fasteners embodying the principles of both bolt and rivet in one fastening.

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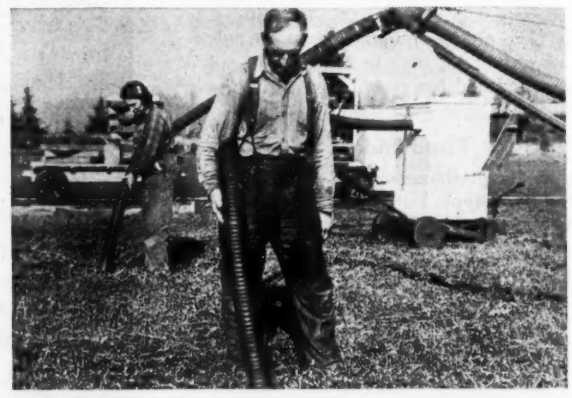
U. S. Rubber Company experts solve any rubber pipe or hose problem... no matter how unusual or difficult

LAYING DOWN ON THE JOB! It takes only 25 seconds for the helicopter to lay this 400-foot pipe line. The hose, developed by United States Rubber Company, is folded into a special container and released at the press of a button. Its civilian and military uses are almost infinite.

FISHY SUCCESS STORY. The 500,000 fish in this boat were unloaded in less than an hour by a special 12-inch vacuum hose compounded by U. S. Rubber. The hose sucks the fish out of the boat, sends them speeding to a storage bin 1500 feet away.



EASY PICKINGS! This vacuum cranberry picker works with great speed, never gets tired. U. S. Rubber made the special hose, aided cranberry growers in developing the machine, thereby increasing the yield.

You'd be surprised to find how many different things rubber hose can do... things it never had been called upon to do before. Come to the foremost authorities in the field, U. S. Rubber, when you have any question that hose may solve. They know about techniques and new methods which may materially lower your operating costs. Write:

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New Bridge Span Is Higher, Wider

Concrete and Steel Bridge Has Four Lanes for Traffic; Water Piers Are Poured From Timber Work Trestles

✦ THE Florida State Road Department has constructed a new bridge over Bakers Haulover, a narrow inlet between Biscayne Bay and the Atlantic Ocean at North Miami Beach in Dade County. The bridge is on State Route A1A, a continuation of Collins Avenue north from Miami Beach along the narrow barrier reef separating the bay from the ocean. Immediately north of the bridge is North Dade County Park with an ocean-front beach.

The new structure, designed for H 20-44 loading, has four traffic lanes as compared with two lanes on the bridge it is replacing. The older span, just east of the new bridge, was built by Dade County in 1924. Besides the narrow roadway for the traffic the road carries, and its limited vertical clearance for boats, the existing bridge created something of a bottleneck when cars turned off the span to reach the adjoining beaches.

Access roads have now been constructed which swing off from the bridge approaches and parallel the bents down to the level of the shore. On the south end these access roads pass close to retaining walls which encase the approach fill for 352 feet. The walls have a maximum height of 18 feet, and rest on footings supported by steel piling.

Dual Roadway

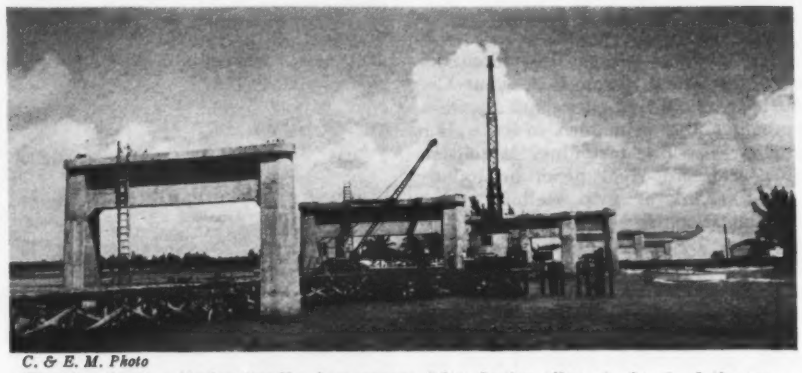
The dual roadways are 26 feet wide each, and are separated by a 4-foot center island. On each side they are flanked by a 6-foot sidewalk. The bridge deck is a 7½-inch reinforced-concrete slab. The approaches are surfaced with asphaltic concrete, Type I, having a 1-inch binder and a 1-inch top, laid on a Miami rock base 8 inches thick. Underneath that the subgrade was stabilized to a depth of 12 inches producing a bearing value of 50 pounds to the square inch. Shoulders are 8 feet wide and the side slopes are 4 to 1. Including the bridge and approaches, the project is 4,400 feet long.

The State Road Department awarded a contract for the improvement to the Hardaway Contracting Co. of Columbus, Ga., on its low bid of $1,440,000. Work got under way in May, 1948, and was scheduled for completion in January, 1950.

Fixed Bridge

Like its predecessor, the new bridge is the fixed type, but its 35-foot vertical clearance in the main channel is about 15 feet greater than that of the original span. The bridge itself is 1,250 feet in length, consisting of four 50-foot approach spans running north from the south abutment, followed by three continuous plate-girder spans, each 350 feet long. Each of these plate-girder spans is made up of three spans—100, 150, and 100 feet in that order. The last girder span ends with the north abutment.

Supporting the short 50-foot spans are the south abutment, then pile bents A, B, and C. Following south to north across the bridge are piers 1 through 10 on which the girder spans rest; pier 10 is also the north abutment. The pile bents consist of twelve steel H-beams columns, 12 HP 53-pound sections, which are encased in concrete 18 inches square. Across the top of these H-beam piles are reinforced-concrete caps—3½ feet wide x 3 feet deep x 74 feet long.



C. & E. M. Photo

Working from a timber trestle, two cranes drive fender piles at pier 5 of the new bridge over Bakers Haulover in Florida.

The steel piles project 12 inches into the caps.

The piers, which were built inside sheet pile cofferdams, consist of two footings and two columns connected by a cap—all of reinforced concrete. This is true for all but pier 10, the north abutment, which has three footings and three columns. The footings are supported on steel H-piling, either 8-inch HP 36-pound; 10-inch HP 42-pound; or 12-inch HP 53-pound. The design loads of these piles are, respectively, 30 tons, 37 tons, and 40 tons.

Built From Trestle

The water piers were built from timber work trestles reaching out from each shore as far as the channel piers in the inlet. These two work bridges were constructed on the center line of the bridge, with the footings and pier columns on either side. Concrete seals were required at piers 4, 5, 6, and 7. Piers 4 and 7, at 34 feet, are the tallest, followed by piers 5 and 6 which are 29 feet high. The pier heights are related to the depths of the plate girders. The bridge builders had to contend with a strong tidal current, as much as 6 feet per second, in and out of the Haulover.

Aggregate for the concrete was handled by a Winslow batch plant which was set up on either shore line, depending on which pier was being constructed. Mixing was done with a Jaeger 3-bag machine, and the concrete was discharged into a fleet of Bell Prime Movers which rolled out on the trestle under their own power to the piers. Then the concrete was emptied into buckets which were lifted to the forms by cranes.

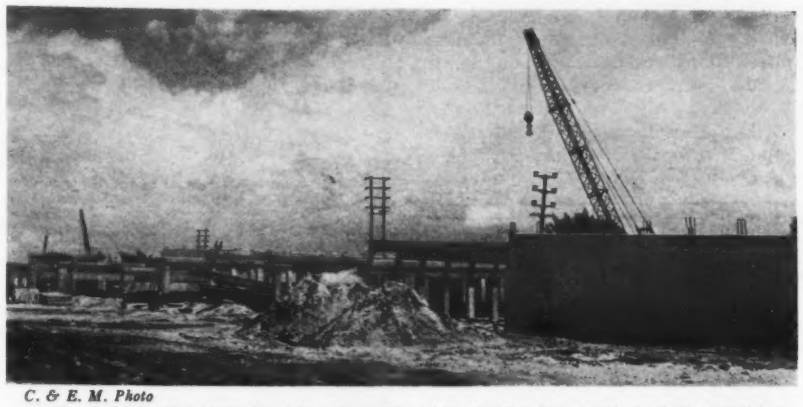
(*Concluded on next page*)

NO PUSH . . . NO PULL . . . with
Cuts HARD WORK, HIGH COSTS because:
Kwik-Mix fully-powered Moto-Bug travels 1½ to 4 m.p.h. both forward AND REVERSE. Power does ALL the hard work.
Positive steering, plus riding step (optional), lets operator ride while traveling, spotting and backing up.
Carries 10 cu. ft. load in big hopper or 1200 lbs. on 4-ft. flat-bed, with one-man economy of operation.
Standard-make 4 h.p., 4-cycle gas engine easily takes full load up 20% grades or ramps.
Result: bigger loads, less operator fatigue, more trips . . . 3 to 4 times more production per man-hour with Moto-Bug.
Handy 33" width easily clears narrow doorways and crowded aisles. Moto-Bug turns in own length. Maneuvering is easy with positive steer.
Low 38" hopper height permits direct discharge from mixer (6-S Dandie illustrated). Power carries load from mixer to forms, keeps output high.
Sturdy 4-ft. flat-bed platform carries 1200-lb. loads . . . has stake pockets for sideboards. Quickly interchangeable with 10 cu. ft. hopper.
Gravity dumps hopper instantly . . . or operator can control rate of discharge by handy rope control. Scoop-shaped hopper is free-flowing.
Name
Title
Company
Dept.
Street
City
State
KWIK
(KOEHRING SUBSIDIARY)

Steel Superstructure

The main steel for the superstructure consists of two girders with a maximum depth of 10 feet on 44-foot centers. Outside of these girders, 12 feet 5 inches from their center lines, is a fascia girder on each side. The approach bents are spanned with I-beams. Structural steel was furnished by the Virginia Bridge Co. and was shipped partly from Roanoke, Va., and partly from Birmingham, Ala., to a siding of the Florida East Coast Railroad at Ojus, Fla. There the members were unloaded by a truck crane and hauled 4 miles to the bridge site.

The steel was erected by the Karl Koch Erecting Co., Inc., of The Bronx, New York, which firm had just finished some other Florida contracts at the time. Steel work started the end of April on the approach bents, with the members being lifted into place by a P&H truck crane equipped with a 60-foot boom. The main girders, weighing 27 tons, were erected with a crawler-type crane operating over the timber work trestle. For the span crossing the channel, the steel was loaded onto a barge which was then moored to fender piles protecting the channel piers. The steel members were picked up and swung into place by a derrick which was located on a lighter.



C. & E. M. Photo

At the right in this view from the west side of the bridge is a portion of the retaining wall. Some of the I-beams have been erected for the superstructure of the first bent span at the south end of the bridge.

The steel was first bolted, then riveted together. As the main steel was assembled in the superstructure, the truck crane was moved up to deck level to set the floor beams. The concrete deck followed right behind the steel erection.

Quantities and Personnel

The new bridge at Bakers Haulover is officially known as the Herman B. Fultz Bridge. The major items in the construction contract included the following:

Excavation	41,777	cu. yds.
Hydraulic embankment	136,825	cu. yds.
Miami rock base, 8-inch	19,626	sq. yds.
Tar prime	3,925	gals.
Asphaltic-concrete surface	19,626	sq. yds.
Concrete	5,463	cu. yds.
Reinforcing steel	787,037	lbs.
Structural steel	2,648,030	lbs.
Steel piling, 8-in. HP 36-lb.	9,300	lin. ft.
10-in. HP 42-lb.	25,300	lin. ft.
12-in. HP 53-lb.	2,460	lin. ft.

For the Hardaway Contracting Co., Dwight Plyler was Superintendent until May, 1949, when he was relieved by D. R. Bird; while Karl Koch, Sr., was Superintendent for the Karl Koch Erecting Co., Inc.

Drew M. Roberts was Project Engineer for the Florida State Road Department, which is headed by Sam P. Turnbull, State Highway Engineer with headquarters at Tallahassee.

Centrifugal Pumps

A new line of close-coupled and pedestal-mounted centrifugal pumps has been announced by the Gorman-Rupp Co., Mansfield, Ohio. Due to the special design of their single suction impellers, practically no end thrust is exerted on the ball bearings of the Alta pumps. Pressure at the stuffing box has been relieved by means of balance rings to prevent rapid wearing out of the packing rings. In addition, the stainless-steel shaft sleeve is not subjected to heavy wear in cases of high pressures at the stuffing box, according to the company.

Serving a capacity head range up to 1,000 gpm and 200-foot head with 14 sizes, 1 to 4 inches, the Alta pumps are designed for high efficiency throughout their range of operations. For example, the company points out, the Model 62½ L delivers 350 gpm at a 175-foot head, including 10-foot suction lift at an efficiency above 80 per cent. The new line is designed to provide a wide range of applications, not only for water, but for all liquids and solutions up to a viscosity of 2,000.

All Gorman-Rupp standard centrifugal pumps, Alta and pedestal-mounted alike, are built to such dimensions that they may be interchanged on different sizes of electric motors as well as on power frames (pedestals), without alterations of shaft and flange mountings. The Alta pumps are regularly furnished with 1,750, 2,900, and 3,450-rpm 3-phase motors of splashproof construction. Single-phase motors up to 5 hp and explosion-proof motors in popular sizes are also available.

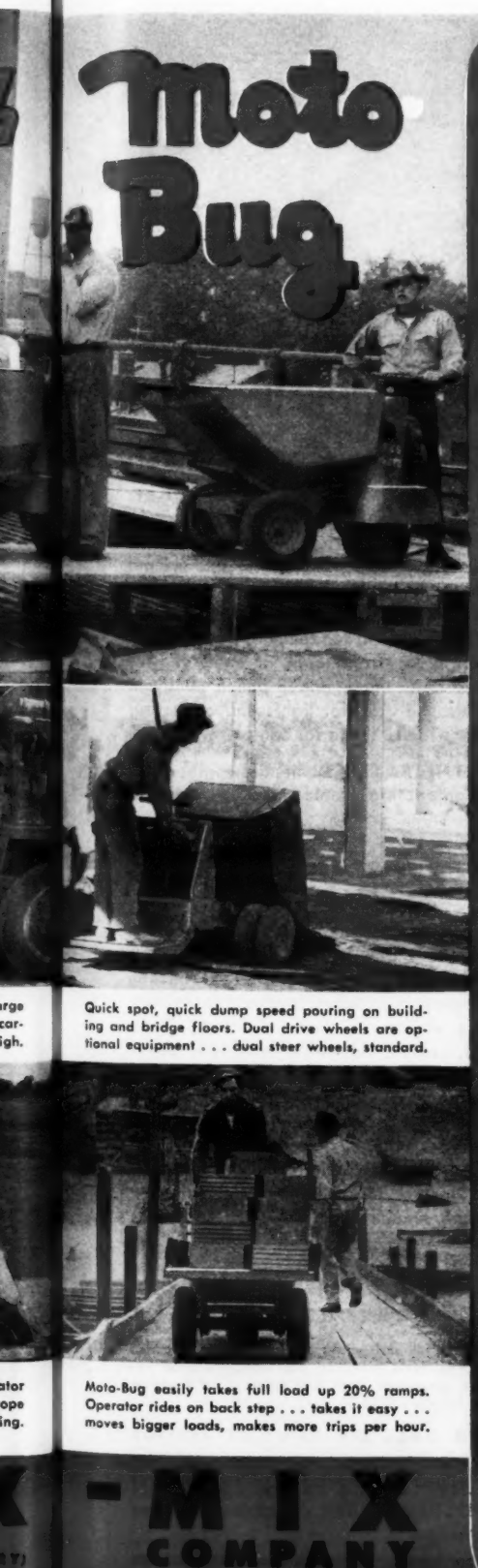
Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 24.

Hydraulic Positioners

Three basic types of hydraulic elevating positioners are described in a new bulletin issued by the Lyon-Raymond Corp., 25464 Madison St., Greene, N. Y. Several optional interchangeable attachments designed to make the positioners adaptable for many types of work are also presented in the 4-page catalog.

The folder explains that Lyon-Raymond hydraulic elevating positioners are furnished in three basic types: stationary type with base forks in the rear, stationary type with base forks in the front, and a portable type with casters and wheels. The lifting mechanism enables the worker to position his job-piece so that he can work on it without changing his standing position.

This literature may be obtained from the company by requesting Bulletn 440, or by using the Request Card at page 16. Circle No. 133.



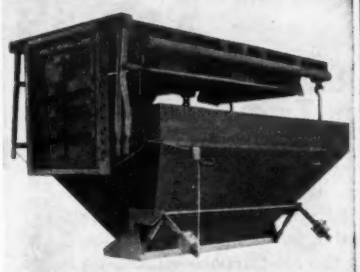
Quick spot, quick dump speed pouring on building and bridge floors. Dual drive wheels are optional equipment . . . dual steer wheels, standard.

Moto-Bug easily takes full load up 20% ramps. Operator rides on back step . . . takes it easy . . . moves bigger loads, makes more trips per hour.

-MIX COMPANY
PORT WASHINGTON, WIS.

ACCURATE . . . "HI-SPEED" ROADBUILDERS' Batcher

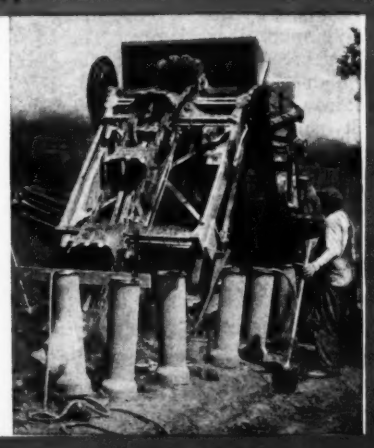
Johnson Roadbuilders' Batchers are completely portable . . . adaptable to fit similar bins . . . provide accurate control . . . produce top-quality concrete with utmost economy of materials. Handle 2, 3 or 4 aggregates in sizes for 34-E paver batch or 2, 3 or 4 yd. batch for charging transit mix trucks. Other Johnson sizes, types to fit production problems of any plant.



C. S. JOHNSON COMPANY
Champaign, Ill.
Koehring Subsidiary

310 TRENCHLINER* digs 15' deep, up to 54" wide

For your heaviest sewer, gas and water-main excavation, check this heavy-duty Parsons 310 Trenchliner. Digs to 15' deep . . . 54" wide . . . has 45 digging speeds from 8" to 186" per minute. Boom is telescopic, easily adjusted for digging depths . . . shifts to cut within 15" of either side of machine. Power shifts the arc-type spoil conveyor. 4 smaller Trenchliners also available.



PARSONS COMPANY
Newton, Iowa

HALF-YARD 205 has self-adjusted clutches

With Koehring ½-yard 205, there's no time-out for daily manual clutch adjustments . . . no "compromise" settings. You get top operating efficiency from start to end of shift because heat-compensator springs on the 205's six main clutches make all tension changes automatically. That's only one of many ways this heavy-duty 205 gives you more work-time . . . bigger daily output. It will pay you to get all the facts on the 205.

KOEHRING COMPANY
Milwaukee 10, Wis.

Low first cost, light weight, servicing ease—that's the story on the liquid-cooled 105 Airmaster compressor.

New 105 Compressor With Liquid Cooling

Low first cost, light weight, and simplicity in servicing are features claimed for the new liquid-cooled 105 Airmaster compressors manufactured by the Le Roi Co., 1700 S. 68th St., Milwaukee 14, Wis. In this liquid-cooled design, Le Roi employs the one-piece engine-compressor block construction, with common crankshaft, cooling system, and lubrication systems.

Low first cost stems from the integral engine-compressor design, according to Le Roi, which also contributes to the ease of operation and servicing. The operator has but one control—the starter switch. As a measure of the simplified servicing, the Airmaster has about 30 per cent fewer parts. It offers replaceable wet sleeve liners in both engine and compressors. Its light weight is designed to make it handy for frequent moves and transporting over rough ground.

The compressor develops its 105 cfm at a speed of 1,100 rpm, which involves a low piston speed consistent with minimum wear of the unit.

Le Roi Co., of Milwaukee, Wis., will send complete descriptive literature, specifications, prices, and shipping data upon request. Or use the Request Card at page 16. Circle No. 98.

Euclid Transfers Ehlert

J. E. Ehlert, District Manager of Euclid Road Machinery Co.'s New England territory for the past year, has been transferred to the southern California district. He is associated with Euclid's Pacific Coast Branch and represents the company in all counties south of and including San Luis Obispo, Kearns, and San Bernardino, in addition to Clark and Lincoln Counties in Nevada. Mr. Ehlert resides at 1027 Marcheta St., Altadena, Calif.

A. E. Sorensen continues as Manager of the Emeryville Branch.

An Improved Agent For Air Entrainment

An improved air-entraining agent has recently been announced by the Industrial Research Division of Autolene Lubricants Co., 1331 W. Evans Ave., Denver 9, Colo. This improved Protex has been developed for ready-mix concrete companies and block plants, but is equally useful for concrete contractors and pipe plants.

Because the basic agent in Protex will not settle out, it assures uniform results, the company says. It is a liquid which, when added to the concrete mix, entrains millions of near-microscopic noncombining air bubbles. These air bubbles are equal in volume and size to 200-mesh sand and are evenly dispersed throughout the mortar phase of the concrete, according to Autolene.

A free book, "Facts on Modern Placement of Concrete Through Air Entrainment", further explains the product and may be obtained from the company. Or use the Request Card at page 16. Circle No. 87.

Materials Loader Has Two Feed Units

The versatile Model No. 5 Speedloader, manufactured by Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill., is available with two distinct and interchangeable front-end feed units; the all-purpose bucket-type feed and the Dragger-Back feed.

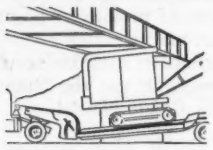
The bucket-type feed is a general-utility loader designed for loading cinders, sand, gravel, crushed stone, topsoil, black-top, etc., from stockpiles to trucks; digging and loading from creek bars; picking up windrowed materials and snow; digging shallow grades; and leveling and mixing road-mix. The Dragger-Back feed is especially designed for high-speed continuous loading of windrowed material and snow. Because it can be converted from bucket feed to Dragger-Back feed and vice versa, the machine can be used for year-round loading operations.

Two front-end feed units are interchangeable on the Model 5 Speedloader—one for general-utility loading and one for high-speed continuous loading of windrowed material and snow. The Model 5 has fluid drive and hydraulic and mechanical crowding.

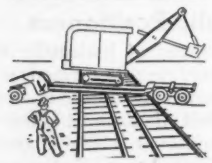
The Speedloader delivers 5 to 8 cubic yards per minute when handling earth and aggregates, and up to 20 cubic yards per minute handling snow, according to the manufacturer. It has a highway speed of 30 mph and a crowding speed up to 90 fpm. The Model 5 has fluid drive and hydraulic and mechanical crowding.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 18.

The ROGERS 4-FEATURE POWER-LIFT DEMOUNTABLE GOOSENECK



← STOOPS TO CLEAR LOW OVERHEAD OBSTRUCTIONS



← RAISES ITS DECK TO CLEAR HIGH BANKED CROSSINGS

Patents Pending

EMBODYING A NEW AND VALUABLE FEATURE IN TRAILER SERVICE

It embodies the kind of versatility that makes every haul *easier, faster, more profitable.*

Loading, at a *lower* angle, is *faster. Larger* tires carry *heavier* loads legally. Unloading, reloading, detouring are *avoided* through quick adjustment of the deck height to *different conditions* encountered.

It's equally as rugged as the standard Rogers Gooseneck regardless of its detachable feature. And it's available on most Rogers Trailers and adaptable to many trailers of other makes.

Bring your equipment up-to-date and be in a position to handle operations more efficiently and more profitably.

Export Office: 50 Church St., N. Y. 7, N. Y. • *Cable Address:* "Broscites"

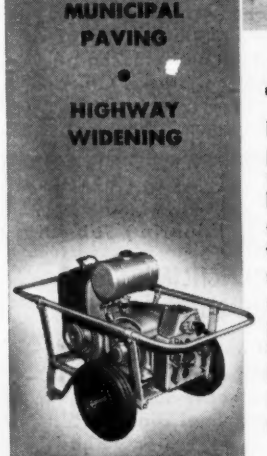
ROGERS TRAILERS

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROTHERS CORPORATION, 108 Orchard St., ALBION, PA.

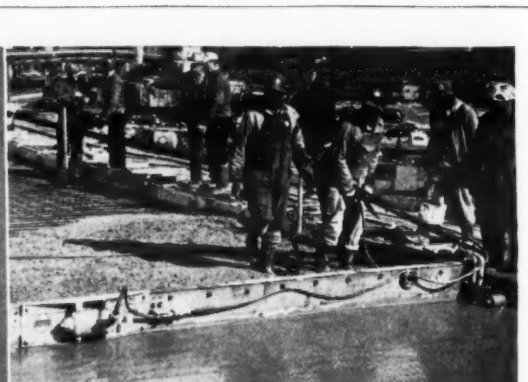
IT'S A "HUMDINGER"

FOR BRIDGE DECKS • MUNICIPAL PAVING • HIGHWAY WIDENING



MODEL M-1 POWER PLANT

Capacity 1.25 KVA. Other plants of 2.5 and 5 KVA. All have permanent magnet generators requiring no adjustment or maintenance. All generate both single phase and 3 phase 60 cycle, 115 volt AC.



JACKSON PAVING UNIT

It consists of a manually guided, electric vibratory paving machine and portable power plant and will place upward of 65 cu. yds. of stiff mix concrete per hour; will undercut at side forms and curbs; strike off to crown (both regular and inverted;) roll back for second passes. Works right up to and around sewers, manholes and other obstructions. Quickly adaptable to any slab width from 6' up to any practical width. Has strong tendency to propel itself. Operators work from front, side or rear. Power Plant generates both single and 3-phase 60 cycle AC and may also be used for lights and operating other contractor's tools. Write for complete details.*

AND FOR THE FASTEST, handiest means of thoroughly compacting granular soils, investigate

THE JACKSON VIBRATORY SOIL COMPACTOR

This machine can be used to tremendous advantage in compacting granular backfill under factory floors, in trenches, bridge approaches, close to bridge abutments, alongside foundations, under footings, ramps, sidewalks, municipal pavements, loading docks; in compacting such granular soil as is used in earth fill dam construction and many other places. Delivers up to 4500 ½-ton vibratory blows per minute. Propels itself at 6' to 8' per min. One man can guide two units side by side. The Jackson M-1 Power Plant will operate two of these machines simultaneously. Complete details on request.*

OTHER MONEY-MAKING VIBRATORY EQUIPMENT

for vibrating full slab widths of highway and airport paving; Side Form vibrators for attachment to finishers and spreaders; mass and general construction vibrators ideally suited to each type of job.

*FOR SALE OR RENT at Jackson Distributors.

Write for the handy JACKSON "POCKET GUIDE" describing the complete line.

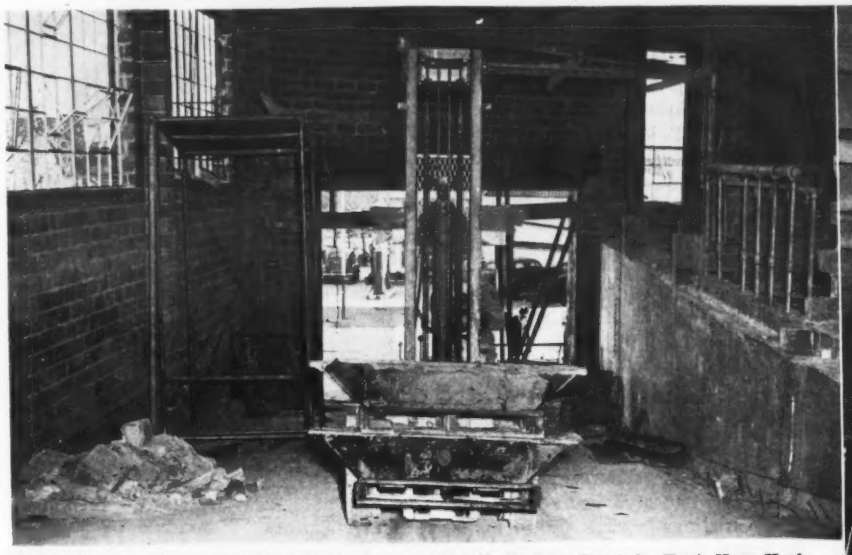
ELECTRIC TAMPER AND EQUIPMENT CO. • LUDINGTON, MICH.

Materials Handling Speeds Construction

Psaty & Fuhrman, Inc., and Atlas Tile & Marble Works, Inc., contractors for the $8,000,000 Board of Transportation's new bus depot in East New York, Brooklyn, took advantage of a permanent concrete ramp which had been built at the start of the job from the street to the interior of the building, and had a special 17-foot gasoline-driven fork lift made to distribute all masonry materials in the 2-story building. This lift permitted one operator to deliver directly to workmen all brick, mortar, and other materials.

On the second floor, with a 23-foot ceiling, the use of the fork lift eliminated expensive scaffolding for bricklayers as well as much hand labor. The lift could hoist materials to the top level of 17 feet, leaving 6 feet of headroom for the workmen on the scaffold.

All materials were delivered on pallets to the side street at the site, and a smaller fork lift transferred them to the major assembling points on the floor. The material was not touched by hand unil it was received by the craftsmen. A total of 1,400,000 brick and other masonry units were distributed by the lift. Commenting on its successful adaptation to the job, Roy Psaty, President of Psaty & Fuhrman, said, "The ramp was the key to the situation. Without it we probably would have used conventional methods of bringing materials into the building."



Contractors on the $8,000,000 Board of Transportation's bus depot in East New York, Brooklyn, speeded materials handling by devising a special fork lift. Above, the lift transports two 1,100-pound mortar boxes, each carrying 10 cubic feet of mortar. At right, it hoists a pallet of 75 gypsum blocks to the mezzanine level.

New Hydraulic Pump

An electric-power hydraulic unit called the PumPac is available from The Jarp Corp., Wausau, Wis. It consists of a pump, oil reservoir, and valve which, when connected to any ordinary 6-volt battery, develops pressures up to approximately 3,000 psi—sufficient to handle a snow plow using standard 1½ or 2-inch-diameter cylinders. The PumPac has many applications, as it can be used wherever power is desired to replace the slow and tedious hand lift.

Models are available with capacities from 100 to 5,000-psi pressures. The pump is equipped with Torrington needle bearings throughout. All bearings and wearing surfaces are constantly bathed in oil. The unit requires only four bolt mountings. It is available for 6 or 12-volt usage and will operate whether or not the truck or tractor motor is running.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 139.

Welder-Parts Exchange Plan

Old welder parts may now be traded in for new factory-wound stators, armatures, etc., at Lincoln Electric Co. field service shops throughout the country. A trade-in allowance reduces the cost for these new parts below the cost of individual local rewinding and repairing, says Lincoln, and factory-trained men at the shops will install exchange parts at standard prices.

For a directory of the 146 field service shops where this welder-parts exchange plan is in effect, write to The Lincoln Electric Co., Cleveland 1, Ohio.

AMERICAN
Deluxe Concrete
WHEELBARROW

Code
PERFECT
15 Gauge
seamless tray

The American Steel Scraper Co.
SIDNEY OHIO

THE **BUTLER SALES MANAGER EXPLODES:**

"HOW COME! WE GOT ONLY 10 OUT OF 12?"

"Listen you! I'll repeat it! How come we got only 10 out of 12 of the Batching Plants on that big Detroit-Wayne Major Airport job?

Butler Salesman: "Well, ah—you see—ah—

Butler Salesmanager: "Yeah! I see alright . . . Where were you when those two other plants were bought? Playing marbles, maybe?

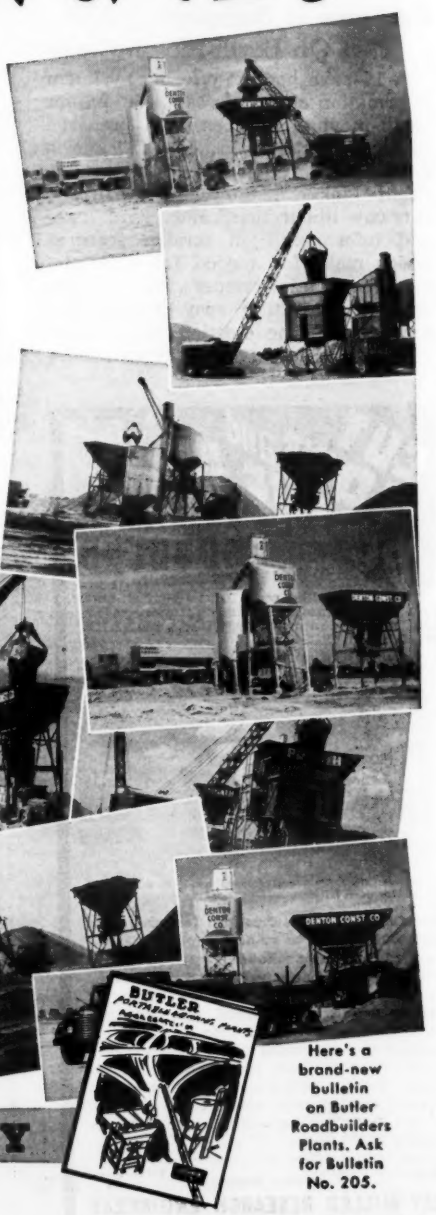
Butler Salesman: "Oh, no sir. You,—well, I mean—

Butler Salesmanager: "Shut up! I'll do the talking. You *know* Butler Batching Plants sell themselves. All y' gotta do is just be there to know what's wanted.

Butler Salesman: "Yessir. I—ah—well,—

Butler Salesmanager: "Only 10 out of 12! —?%$*#""!!* I oughta shoot myself!

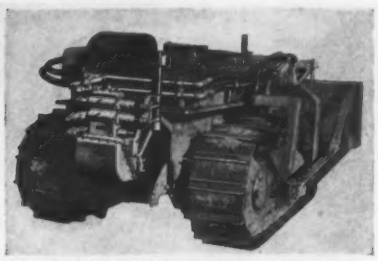
Yes, it's true alright. Out of 12 Bulk Cement and Aggregate Batching Plants used by the three-contractor Team that built the Detroit-Wayne Major Airport, only 10 were built by BUTLER. We just don't understand it!



Here's a brand-new bulletin on Butler Roadbuilders Plants. Ask for Bulletin No. 205.

BUTLER BIN COMPANY

951 Blackstone Ave., Waukesha, Wis.



A typical installation of the Kay-Brunner hydraulic control unit for combination dozer and scraper operation. By adding more valves, other attachments can be handled.

Hydraulic Control For Crawler Tractors

A new type of hydraulic control unit which can handle almost any number of ram-operated attachments by the addition of more valves has recently been announced by Kay-Brunner Steel Products, Inc., Equipment Division, 2721 Elm St., Los Angeles 65, Calif. Featuring pump, valves, and tank in one unit, it is adaptable to all models of crawler tractors.

Control valves are provided with a float position which allows free circulation of fluid to both sides of the ram, without hydraulic lock. This feature is adaptable primarily for dozer operation. Valves are so designed that ram lag is eliminated. Cool operation is provided by a large reservoir which permits ample surface contact of hydraulic fluid for dissipation of heat. Pump capacities are from 25 to 65 gpm at 1,000 rpm. Maximum working pressure recommended by the manufacturer is 1,000 psi.

Further information may be secured by requesting Bulletin 366-Ed. Or use the Request Card at page 16. Circle No. 102.

Features of Scrapers On Earth-Moving Jobs

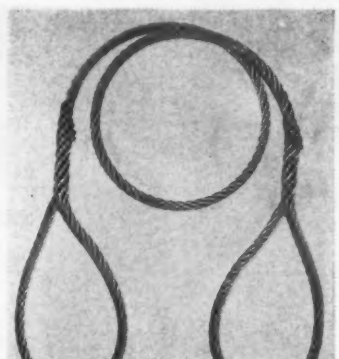
A 16-page booklet offering pertinent information on scraper applications for earth-moving jobs has been prepared by the Caterpillar Tractor Co., Peoria 8, Ill. Titled "Caterpillar Scrapers Are Profit Makers", the catalog contains cutaway illustrations along with data and information on scraper features which make for a good job of earth-moving. These scrapers, the catalog points out, feature easy loading, big tires, dozer-type ejection, high apron lift, low center of gravity, open-top bowl, and low maintenance costs. It also shows Caterpillar scrapers at work on various jobs across the country.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 145.

New Wire-Rope Sling

Made for all kinds of loads and pulls and for every type of hitch, Pennrope wire-rope slings incorporate a double safety feature for protecting employees' hands from splinters, according to the Pennsylvania Wire Rope Corp., 940 First St., Williamsport 19, Pa. They are also said to add extra dependability for loads carried, through use of a button-weld construction at the usual splice point.

Designed to give users the economy of stock slings in sizes and forms made to order, they are engineered to meet particular load requirements. Pennrope slings are available in all wire-rope diameters, in any lengths, and with types of fittings made to customers' specifications.



Button-weld construction at the usual splice point increases the safety factor of the Pennrope wire-rope slings.

Further information on the Pennrope slugs may be secured from the company. Or use the Request Card at page 16. Circle No. 47.

Catalog Sections on Hose

Three new catalog sections describing particular lines of hose have been issued by the B. F. Goodrich Co., Akron 18, Ohio. Each section lists the specifications of the hose, describes materials and methods used in its construction, and recommends uses. These sections cover sand-blast hose, hose used in butane and propane gas service, industrial vacuum hose, and a line of spray hose for use in painting or chemical weed control.

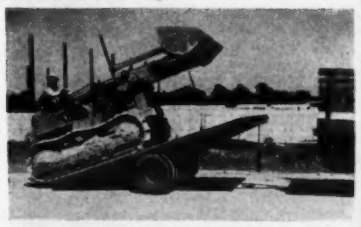
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 84.

Stoody Metallurgists

Stoody Co., Whittier, Calif, manufacturer of hard-facing alloys, has advanced Charles E. Rogers from his position in charge of the Metallurgical Laboratory to Sales Metallurgist. It has also acquired the services of Paul Irish as Plant Metallurgist.

CUT COST and DO THE JOB WITH A MILLER MODEL B

Because of heavy duty construction and low original cost you can do more hauling quicker, safer, and more economically with a MILLER MODEL B Tilt Top.



Above: ONE MAN easily loads an H D 5 crawler tractor on a Miller Model B Tilt Top.

Here are just a few of the features that make Model B a smooth operator in a rugged business. Model B frame is all welded, tapered channel steel engineered to give low fiber stress at areas of highly concentrated loads. The "straight through" axle welded into heavy steel tubing ties the main frame and gives a solid steel support from axle to platform. Dual wheel axle assembly is securely welded with alloy welding rods. Model B is on immediate delivery for only $975.00.

Optional equipment listed below is priced extra.
Hydraulic lift control — Electric Brakes — Two Speed winch

RAY MILLER RESEARCH ENGINEERS
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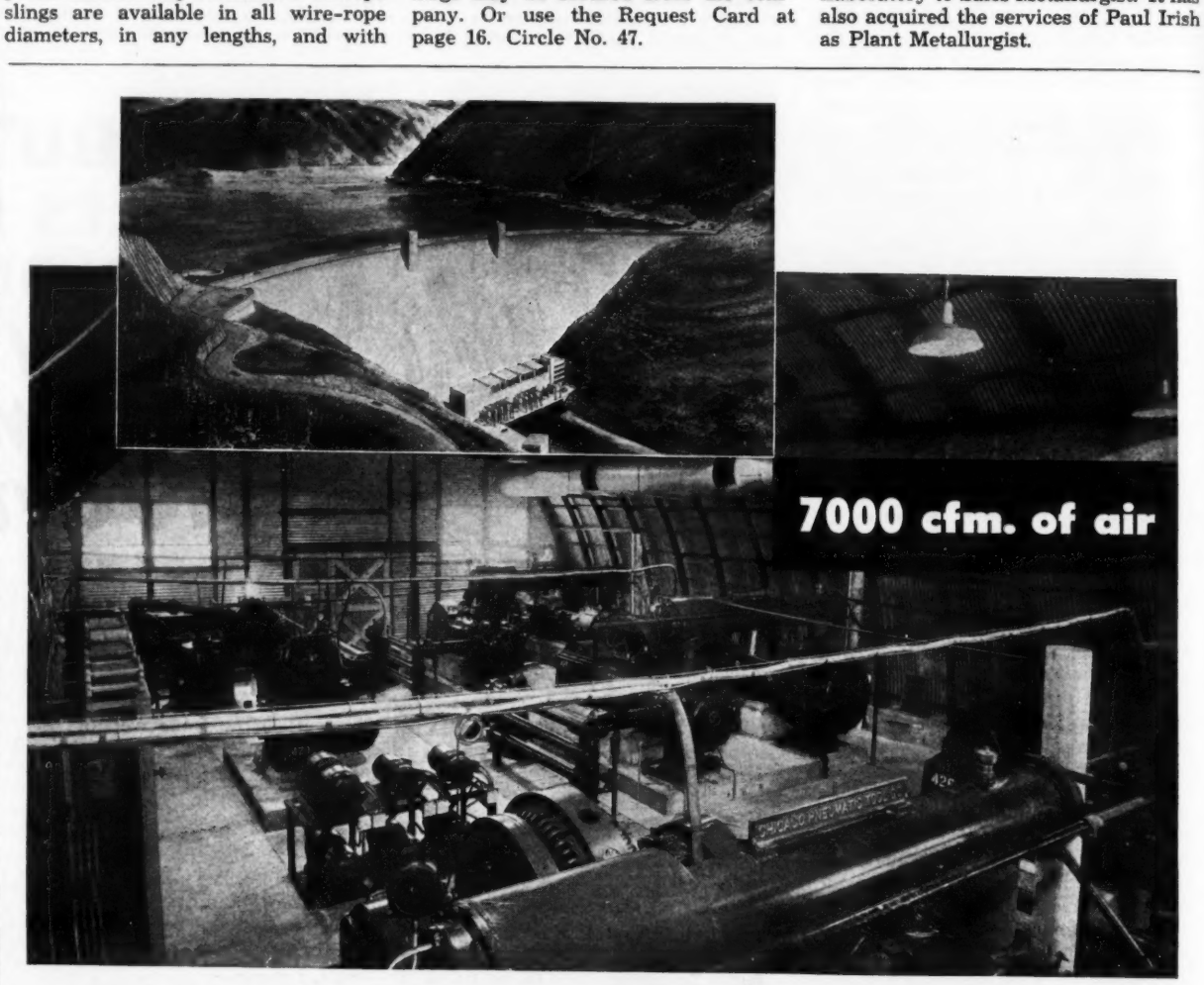

Here's a good example of CP air compressors on a big construction job. At Hungry Horse Dam, gigantic irrigation and hydroelectric project, four Type O-CE and two Type Y Compressors are providing 7010 cfm. of air at 100 lbs. In addition to this stationary compressor plant, the contractors are using six CP Portable Compressors for mobile operations.

In the CP line there is just the right compressor for any construction job. The rugged, heavy-duty, horizontal-duplex Type O-CE is furnished in sizes up to 2000 h.p. The compact, space-thrifty Type Y is available in capacities of 500 to 900 cubic feet per minute, at 80 to 125 pounds pressure.

CP Portable Compressors, gasoline-driven, are available in sizes of 60, 105, 160, 210 and 315 cfm., actual capacity, and in Diesel-driven sizes of 105, 160, 210, 315 and 500 cfm.

Write for detailed information

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Dam Concrete Mixed Through Road Paver

(*Continued from page 34*)

although very little is rock.

The forms consisted of panels, with 2 x 6 studs on 16-inch centers, and 3 x 4 wales 30 inches apart. Williams steel form bolts and inner bolts were used, with Vibra-Lock washers. These form ties were 30 inches on center both ways.

Since the two sides of the spillway are similar, one set of forms was built for one side. These forms could then be re-used on the opposite side by making a few changes in the plywood facing, reversing its direction on the opposite side of the form panel. Generally speaking, none of the form panels for one side were interchangeable, due to the design of the spillway structure.

The panels were hauled out to the spillway on a flat-bed truck, and set in place by a Lima ¾-yard crawler crane. Each form was checked carefully before each pour, with a few occasional changes then necessary because of variations in survey points.

Steel reinforcement was also handled by the Lima crane, after arriving on the spot in bundles from the steel fabricator.

Concrete Dry-Batched

Concrete aggregate in one size, with sand for the mix, was shipped in by rail from a commercial aggregate producer in Bismarck. An average of 5 carloads per day arrived over the Northern Pacific railroad, to be spotted on a side track constructed adjacent to the project. The shipments were made in hopper-bottom cars, which could be unloaded with very little trouble.

With a bulldozer, Adler's men cut a truck pit about 10 feet from the railroad track. The vertical track side of the pit was then bulkheaded off with heavy ties, standing on end with a penetration of about 3 feet. Cables anchored this bulkhead so it could not move.

A small hopper was then built under the tracks, and a Barber-Greene car unloader installed. The end of the conveyor on the Barber-Greene machine reached over just far enough to reach the bed of dump trucks which hauled the aggregates to the batch plant. Two men who handled the cars and operated the unloader had to shovel a little to level off the material in the truck beds, but their superintendent said, "They were young, their backs were strong, and they weren't doing anything else anyway."

C. & E. M. Photo

At the Adler batch plant, a Hough loader on an International I-6 loads sand into the top bin above the pulsator unit.

The sand and aggregate was hauled in and stockpiled in front of the Noble manual batch plant. This plant had been set up against a vertically cut bank in such a way that the tops of the bins were level with the surrounding ground. In this manner all the materials could be loaded into the Noble bins direct, by an International I-6 and a Hough front-end loader, which worked from the upper level where the stockpiles had been made.

Bureau of Reclamation specifications for concrete were too rigid to allow the gravel to be used direct, so the Hough loader put the materials into a primary hopper, which fed the rock down over a Telsmith 3 x 6-foot pulsator screen powered by an Allis-Chalmers engine. All of the coarse aggregate was run through at one time. Oversize particles from the screening went to the 1½-inch-size aggregate bin, and the ¾-inch aggregate passed down into the ¾-inch bin.

The finished product thus consisted of three sizes of aggregate: sand, ¾, and 1½-inch, all of which were produced from two stockpiles. This precaution was of course necessary to take care of any segregation which may have

(*Concluded on next page*)

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. . . for faster, cheaper and quieter drilling

SAVE TIME and MONEY on every job! TERMITES hold their gauge—bore hundreds of holes clean, true and fast. Pulverizing action eliminates ear-shattering noise and permits drilling close to edge of concrete members without breakage. TERMITES fit any ½-inch electric drill. Three styles handle all drilling in masonry, concrete, tile or brick.

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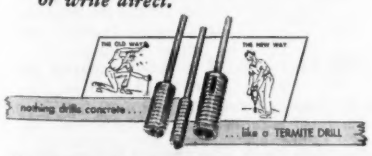

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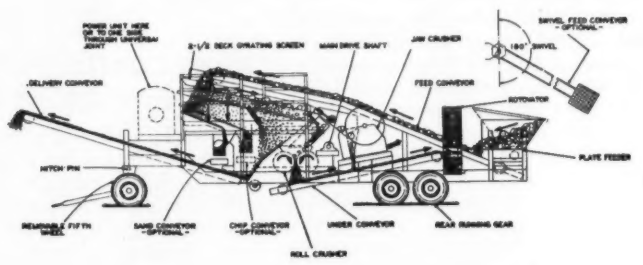

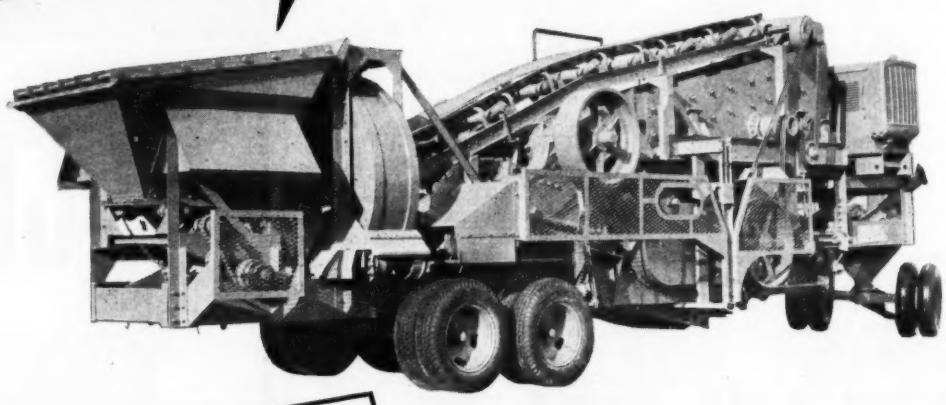

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- 1024 or 1036 Roller Bearing Jaw Crusher.
- 2416 Roller Bearing Star Gear Drive Roll Crusher.
- 3' x 10' Roller Bearing 2½-Deck Inclined Gyrating Screen.
- 6'-2" x 19" Rotovator.
- 24" Wide Conveyors. Sealed-for-life bearings.
- Plant Mounted Power or Side Drive through Universal joint.
- Countershaft for Main Drive permits choice of 1000 to 1600 RPM plant-mounted power units.
- Maximum use of V-Belt drives.
- Sand removal standard. Conveyor optional.
- Chip removal standard. Conveyor optional.
- Overall height—12'-6".
- Passes state weight limitations.

CAPACITY—60—90 yards per hour—1" based on 25% crushing with 1024 jaw crusher. For more than 25% crush, the 1036 is recommended.

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UNIVERSAL'S "Scalping Deck" method of screening assures more effective screening, faster material flow. The heavy top "scalping deck" protects the finish deck from materials too large for the rolls and permits the lower screening area to be fully utilized. The screen is mounted at an incline giving faster separation for higher capacity, better gradation for meeting the most exacting specifications. No screenable material is carried over to choke the crushers. Material too large for the rolls is scalped to the jaw crusher. Only sized material goes to the rolls. This means greater capacity, less jaw and roll wear, lower horsepower requirements.

Only UNIVERSAL offers the superior advantages of "Stream-Flo" Engineering to give you more for your money in performance, in economy . . . in more tons per hour at less cost per ton. With all their extra value you don't pay a premium for a UNIVERSAL Gravelmaster. Made in 4 sizes with capacities up to 200 yards of -1" per hour. Investigate now. Write for complete details.

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C. & E. M. Photo

A workman sprays Sealtex concrete curing solution on a freshly stripped wall pour at Dickinson Dam.

Dam Concrete Mixed Through Road Paver

(*Continued from preceding page*)

occurred in handling the material.

After the dry batches had been properly proportioned by the Noble batch plant, 3 batch trucks hauled the material away. Another drive-through pit had also been constructed between the batch plant and the dam. The batch trucks drove through this pit, where sacked Universal Type II cement was added.

Due to a peculiarly harsh condition, two sizes of fines were also added at the cement platform. Composed mainly of 100 and 200-mesh fines, the material was weighed out in a platform scale and wheelbarrows, and dumped to each batch. All of this material each batch required could be handled easily enough in one wheelbarrow, so the work went along fast enough here to keep up with a pouring rate of about 35 cubic yards an hour.

The dry batches were dumped to the skip of a Rex 34-E dual-drum highway paver, which mixed the cement and aggregates with water and Protex air-entraining agent. The concrete was then dumped to a 1-yard transfer bucket, which was in turn handled to the pours by the 2-yard Lima crawler crane.

Mall electric vibrators were used to consolidate the mix, and after the surfaces were formed, they were cured by a spray application of Sealtex concrete-curing solution. Bureau specifications required the use of a paint spray, with an agitator to keep the pigment stirred up.

Flat slabs were finished off to give the same result as a wet steel-troweled surface. Bureau specifications now name the type of concrete surface desired, and exact tolerances for each type are specified. This has come about rather recently, largely through the cooperative committees of the Bureau and the Associated General Contractors of America.

Concrete work was placed and finished to the straightest lines and the best grades possible under the circumstances. It is grade A work, and looks it.

Personnel

Field work on the concrete structure was under the general direction of W. H. "Sandy" Patterson, General Structure Foreman, working under Harold Adler. A. B. Farnsworth was Concrete Placing Foreman. Other key men included Nolan Wallace, Carpenter Foreman; Herb Malone, Form Prefabrication; and Lou Wright, Head Cement Finisher.

New Coating Gives Protection to Metal

Specially designed to protect exterior surfaces exposed to atmospheric and other corrosive conditions, a new rust-inhibitive coating compound is announced by Ace Laboratories, 1614-18 Coutant Ave., Lakewood 7, Ohio.

This new multi-purpose protective paint, called Kem-Ban, is said to provide both effective rust-inhibiting action and resistance to acids, alkalies, chemical fumes, moisture, salts, and alcohols. Applied by spray, dip, or brush methods, the resultant coating is a fire-retardant film of uniform thickness and high hardness, yet of sufficient elasticity to cope with the coefficient of expansion brought about by temperature changes, according to the manufacturer. The coating produced will not check, peel, or crack, it is said. Depending upon film thickness desired, the material can be reduced for application from 20 to 50 per cent with ordinary turpentines.

Kem-Ban also is reported to adhere to all metals and alloys, galvanized surfaces, clad metals, and wood. Ace states that the material is suitable for use as a sealer for hot plaster, stucco, cement, concrete, and other alkaline materials. It is recommended by the manufacturer especially as a rust-inhibitive finish for structural steel, transportation equipment, construction equipment, and road-building machinery; and may also be utilized in product-painting operations either as a primer or as a final protective finish coat.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 37.

New Powerful Heavy Duty 8½" MallSaw
REG. U.S. PAT. OFF.

Weighs Only 12 Lbs. For Right or Left Sawing

A standout for price, power performance, convenience, this new light weight MallSaw cuts everything from wood to steel. It makes straight cuts from 11/16" to 3"; 45 degree bevel cuts to 1-11/16".

Blades are available for dadoing, grooving tile, transite, concrete, cutting light gauge metals.

Choice of right or left blade, 115V or 230V AC-DC motor. $66.45 without bevel shoe attachment. Other models with 2" to 4½" capacities.

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CANTON TENSION-PULL CONTINUOUS LOAD BINDERS ARE

***GUARANTEED AGAINST BREAKING OR SPREADING**

70% of compensation injuries** result from failure of load binders, common causes of which are spreading of clevis or breaking of hooks. Canton Tension-Pull Load Binders are made of a durable alloy and have drop forged hooks, which are attached to 360° swivels on both tongue and clevis. Canton Tension-Pull Load Binders add a safety factor that is positive employee insurance against injury, that saves material from damage in transit, and reduces lost time in tie-ups resulting from load slippage or binder replacement.

1. Continuous load take-up feature walks up chain and tightens to any desired tension.
2. Drop forged hooks provide added strength with sure-grip on binding chain.
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4. Each loader individually tested at factory on specially designed hydraulic testing machine.
5. Most inexpensive continuous loaders on the market.
6. Four sizes fit all requirements from light hauling to heaviest commercial uses.
   - No. 17 — 6000# rated capacity on ⅜" x 7/16" chain $3.95 ea.
   - No. 19 — For steel hauling on ⅜" x 7/16" chain. Prices on request.
   - No. 20 — 15,000# rated capacity on ⅜" x ½" chain $6.90 ea.
   - No. 24 — 30,000# rated capacity on ½" x ⅝" chain $11.50 ea.

Write for complete information and dealer discounts.
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**From a recent survey among haulers of heavy steel.

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Completely automatic Cancap affords low cost protection with 3 sizes to fit all vertical exhaust pipes from 13/16" to 4¼". Easy to install, no bushings or fittings required. Creates no back pressure.

#2 Cancap—fits all exhaust pipes from 13/16" to 2⅜" . . . $1.90 ea.
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Available for immediate shipment.

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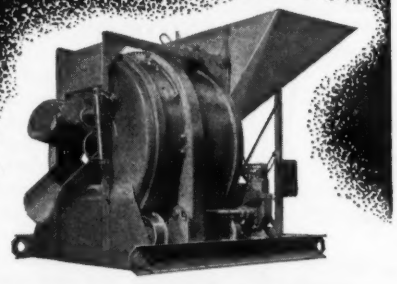
First IN BIG JOB MIXERS



1-2-3 YARDERS FOR INCREASED CENTRAL PLANT PRODUCTION

These big-producing CMC Mixers are known for increased production in central plants on large construction operations or in commercial ready-mix plants. A half century of Mixer "Know-How" assures owners of engineering that means faster, smoother and more efficient operation. All adding up to *greater profits* for owners.

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Write for Bulletin M-56

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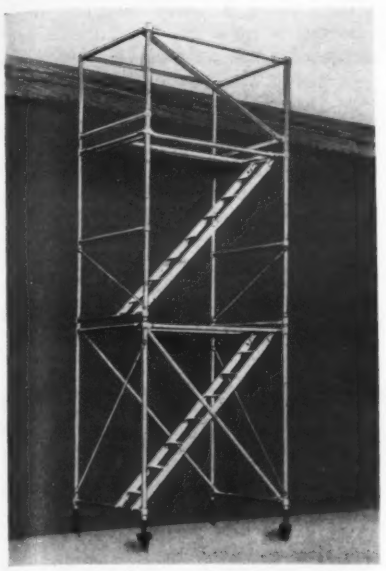


A new aluminum sectional-type rolling scaffold in stairway and ladder styles is offered by Patent Scaffolding Co.

Aluminum Scaffolds

A new sectional type of aluminum rolling scaffold is announced by The Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City, N. Y. Lightweight and easy to erect, it is designed for many types of overhead and sidewall work in construction, painting, cleaning, and building maintenance. The scaffold is offered in a stairway and a ladder type. All parts of both types, except casters and platforms, are made of lightweight durable aluminum alloy.

These scaffolds are supplied in one or more sections, with guardrails. The bottom section, including non-elevating casters, is 7 feet 3 inches from ground to first platform. Each additional section is 6 feet 8 inches high. Base dimensions are 4 feet 6 inches x 6 feet. Two types of 5-inch steel casters are available—a non-elevating type and an adjustable type with a steel screw providing additional height. Frames for intermediate sections slip over a sprocket in the lower section. This joint is secured by a hinged pin for extra safety. A novel spring lock secures horizontal members quickly and safely.

Further information may be obtained from the company. Or use the Request Card at page 16. Circle No. 108.

Flexible-Pavement Thickness

The Highway Research Board has published a revision of its Wartime Road Problems Bulletin No. 8. The original bulletin presented a method of estimating the thickness of flexible pavement necessary for highway loads. Since its release, a great deal of new and pertinent information on the problem has become available in connection with the construction and performance of highway and airport pavements. The revised bulletin is devoted largely to the empirical methods of design which are now considered most reliable. They are presented in a convenient form for highway engineers to adapt directly to design over the wide range of conditions encountered in flexible-pavement construction in the United States.

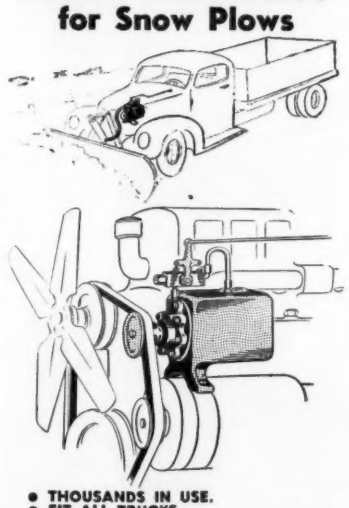
Bulletin No. 8-R (revised edition) may be obtained by writing to the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. Its price is forty-five cents.

Keshen on New England Beat

Hose Accessories Co., Philadelphia, manufacturer of Le-Hi hose couplings, has named Charles G. Keshen to represent it in New England. Mr. Keshen is at 18 Boulevard Terrace, Allston, Mass.

Construcciones Jorge Larrea, S. A., used 4 of these Model 27RD rear-dump Euclids to haul rock fill for Excame Dam, about 120 miles northwest of Zacetecas, Mexico. The dam will provide flood control and irrigation water from the Tialtenango River.

POWER HYDRAULICS for Snow Plows



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NEW INTERNATIONAL TRUCKS

ARE *Heavy-Duty Engineered* TO SAVE YOU MONEY

Heavy-duty engineering for long truck life on tough truck jobs is yours now in every single new International Truck from 4,200 to 90,000 pounds GVW.

That's the same extra value engineering that has kept Internationals first in the sale of heavy-duty trucks for 18 straight years.

America's most cost-conscious, profit-minded truck users have preferred Internationals year after year for only one reason: heavy-duty engineering means that International Truck performance is longer life performance, lower operating and maintenance cost performance.

And now the same management, engineers, test experts, and production men who kept Internationals a tradition in the heavy-duty truck field have developed *every new International Truck.* No matter what size truck you use, there's a heavy-duty engineered International Truck that's right and ready for you!

You'll find new comfort in the new Comfo-Vision Cab

Model for model, here is "the roomiest cab on the road." It gives you new comfort in easy-riding cushions, adjustable seats, controlled ventilation. It gives you full front visibility through a one-piece, scientifically curved Sweepsight windshield.

And comfort is right at your fingertips when you take the sturdy wheel. The entire steering system is engineered for more positive control from a more comfortable position.

You'll get an all-new truck proved under actual operating conditions

"Proved under actual operating conditions" takes in years of time, millions of dollars, countless miles. But these new Internationals took in all those and then some—to give you proved-in-advance performance.

No matter what kinds of roads or loads, climate or conditions your trucks must meet, there's a new International that has been *proved* right for your requirements.

Find out all about that truck from your nearest International Truck Dealer or Branch, *soon.*

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors
Motor Trucks . . . Industrial Power
Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars" NBC, Sunday afternoons

ALL NEW, ALL PROVED

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

The man in the foreground is reaching to second-story level with a new type of extension spray gun. An area of 200 square feet or more can be reached from one position, the manufacturer says.

Extension Spray Gun Paints Remote Places

A new type of extension spray gun for industrial maintenance painting has been developed by the Eclipse Air Brush Co., 390 Park Ave., Newark 7, N. J. The gun can accommodate any sprayable fluid from light paints to heavy asphaltic compounds, the company says, and can reach "second-story" levels.

The Eclipse extension spray guns are offered in lengths from 4 to 12 feet in 2-foot intervals. Thus, it is pointed out, a painter operating the 12-foot extension gun would be able to stand on the ground and spray-coat a surface 16 feet or more above ground level. One of the guns is equipped with a 360-degree nozzle designed for remote-control spraying of the inside of pipe and conduit. Variations in nozzle and extension-arm design, the company adds, make possible spray-coating around corners and in otherwise inaccessible locations. The Eclipse extension guns are light in weight; a 6-foot extension weighs 4 pounds.

Three models are offered: EX-T, TO, and AE-46. Newest of the group is Model EX-T, which features the Eclipse four-finger trigger control developed for easy off-and-on operation. This model is available with fixed or adjustable-angle spray head. The EET shut-off assembly can be used in place of the EX-T trigger grip where desired. Model TO is the simplest and lightest of the extension guns. It has separate shut-off cocks to control fluid and air, and is particularly suitable for heavy painting where light weight and a minimum number of parts are considered more important than versatility and rigidity. For coating roofs and other heavy uses, Eclipse recommends Model AE-46.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 41.

Slide Rule Solves Liquid-Flow Problems

A newly designed plastic slide rule for solving problems in the flow of liquids in commercial pipes and smooth-drawn tubing is available from C. J. Major, 2252 Fifteenth St., Wyandotte, Mich. The dimensional stability of the Vinylite rigid sheet plastic is designed to provide the accuracy needed in such an instrument. The rule solves the Fanning equation and may be used to calculate pressure drop, pipe diameter, or rate of flow for any liquid whose viscosity and density are known. The slide rule, 10½ inches long and 3¾ inches wide, solves problems in either turbulent or stream-line flow, and automatically indicates which type of flow exists in a given problem.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 25.

Helps Select Speed Reducers

Engineers and designers can select Falk parallel-shaft sleeve-bearing speed reducers quickly and easily by using Bulletin 1110, recently released by The Falk Corp., 3001 W. Canal St., Milwaukee 8, Wis. This improved bulletin is designed to provide complete engineering data on Falk parallel-shaft units in an easy-to-read and handy form. At a later date, a separate sales bulletin on Falk parallel-shaft speed reducers will be issued to supplement the engineering bulletin. Individual sales and engineering bulletins are expected to be a time-saver for all users.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 76.

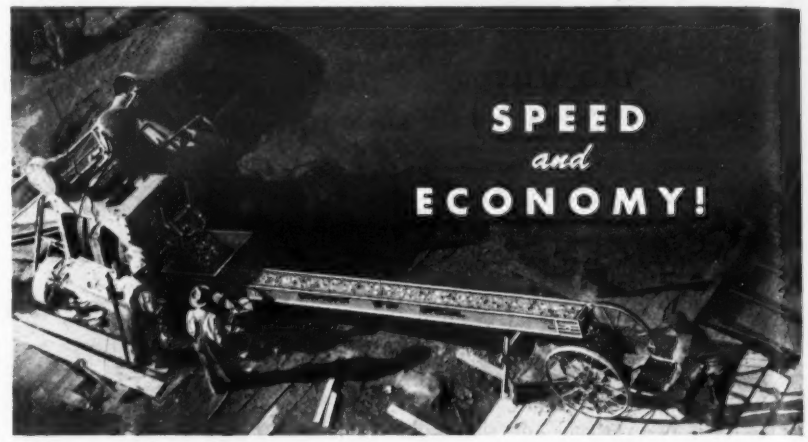
Rakes for Ground Clearing

Whether you're clearing roadsides, right-of-ways, airports, or reservoirs, you can get rocks, boulders, underbrush, and roots out of the way fast and efficiently with the proper rake equipment, according to a 12-page catalog recently issued by the Florida Land Clearing Equipment Co., Jacksonville, Fla.

Illustrated with plenty of on-the-job photos of land-clearing operations, the folder highlights features of the Fleco rock rake, root rake, and stumper. Where there is heavy tree and brush clearing to be done, the bulletin suggests using the detachable stumper for tree dozing and stumping and then the root rake for raking and piling. The change from stumper to rake can be made in about 15 minutes, the manufacturer reports.

Other features of the Fleco rakes pointed out in the catalog are the attachable cutting edges, wearing caps, and top guards.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 151.



With CON-VAY-IT 12-20 CONCRETE SPECIAL contractors in all parts of the country are pouring concrete in about 1/5th the time formerly needed. They're also using this versatile conveyor for loading and unloading trucks, removing excavating materials, and conveying bricks, blocks, dry aggregate, etc.

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Firm_____
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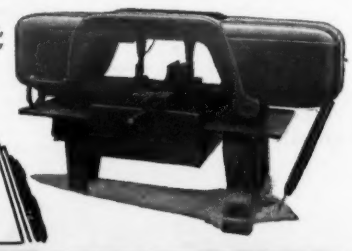
As an added safety feature, all Model "J"

JOHNSON METAL CUT-OFF BAND SAWS

come equipped with a BLADE GUARD. This guard is located between the Left Frame and Guides. It covers the exposed cutting portion of the blade as a means of protection. The Guard can be readily removed to change blade. Model J (illustrated), heavy, sturdy, cuts 10" rounds, 18" flats.

Also Model B, lighter, portable, rigid. Cuts 5" rounds, 10" flats.



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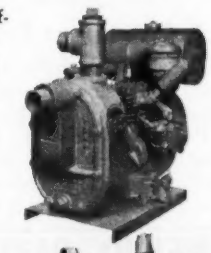
ALBION, MICHIGAN

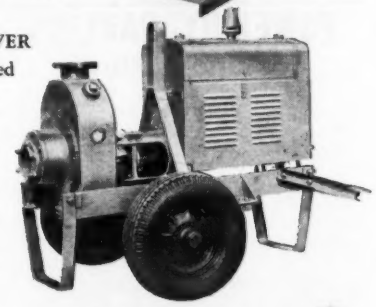
Marlow Pumps ... sign of good pumping on construction jobs.

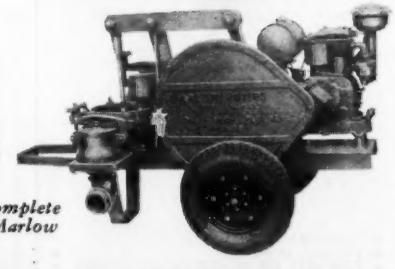
MARLOW MAKES THE WORLD'S MOST COMPLETE LINE OF CONSTRUCTION PUMPS

MARLOW MAKES BOTH TYPES . . . self-priming centrifugal and diaphragm . . . MARLOW MAKES THE LARGEST SIZE RANGE . . . 1½ to 10 inch, 3,000 to 240,000 GPH for the Water Wizard Self Priming Centrifugals. And for the Mud Hog Diaphragm Pumps — 3 and 4 inch single and 4 inch double, capacities to 9,000 gallons per hour. Steel wheel, rubber tire or flat-base mounted.

MARLOW OFFERS THE WIDEST POWER CHOICE . . . Gasoline or Diesel, air-cooled or water-cooled. Electric-driven. Belt-driven. PLUS EXCLUSIVE MARLOW FEATURES . . . In the centrifugals; fast, automatic, trouble-free priming and repriming, by the exclusive diffuser method. In the diaphragm pumps: patented non-clogging valves. And other exclusive features.







Wherever pump users gather you will hear the name MARLOW used as a standard of pump efficiency, trouble-freedom and long life. It will pay you, too, to standardize on the standard.

Write the Marlow factory for complete information and the name of the Marlow dealer nearest you.

MARLOW PUMPS 555 GREENWOOD AVENUE RIDGEWOOD, NEW JERSEY

MANUFACTURERS OF QUALITY PUMPS SINCE 1924

A New Retail Store Built for Sears-Roebuck

Two-Story and Basement Structure of Concrete and Steel Rests on Gravel Mat Twelve Feet Thick

♦ SEARS-ROEBUCK is building a new two-story and basement retail store in West Springfield, Mass. The concrete and steel structure, measuring 122 x 286 feet, is located on a large lot fronting on Memorial Avenue. It will replace the present retail store in the congested downtown section of Springfield, just across the Connecticut River. The new site will also have a separate service station, 50 x 119 feet, of similar construction, in which automotive supplies such as oil, tires, batteries, etc. will be sold. An adjoining parking lot will accommodate 500 customers' cars.

On the roof of the main building is a penthouse measuring 99 feet 5 inches x 44 feet 6 inches. The building is designed so that additional stories can be provided if warranted. Construction started in mid-April, 1949, and the store is scheduled to be opened this spring. Ley Construction Co. of Springfield, Mass., is the general contractor, and the building will cost in the neighborhood of $1,000,000.

A gravel mat, 12 feet thick, supports the 26-inch reinforced-concrete basement floor slab. The 24-inch concrete foundation walls reach the first-floor level which is an 8-inch concrete slab. Concrete columns, averaging 24 inches square, divide the floor area into 26 x 24-foot bays. Above the first floor the framework is of structural steel with the floors and roof of concrete construction and with brick exterior walls, 12 inches thick.

Deep Foundation

Ground level at the site is around elevation 93. Excavation for the foundation went down 26 feet below this level. Some preliminary grading was done with a Wooldridge 8 to 10-yard scraper pulled by a Caterpillar D8 tractor, but the bulk of the digging was handled by shovel and dragline, a Lorain and Lima 2-yard machines doing the work. The top of the hole extended back 55 feet from the intended exterior lines of the building, original ground being reached on 1 to 1 slopes. A 5-foot-wide bench was cut into the slope at an intermediate level to support the header pipe for a wellpoint system.

Along the northerly side of the site, fronting on the avenue, steel sheet piling was driven in lieu of the slope excavation. The sheeted section was 70 feet long, and the piling was driven by a McKiernan-Terry air hammer, No. 7, with a couple of 315-cfm compressors furnishing the necessary air for driving.

The initial 16 feet of hole was excavated without incident, but the remaining 10 feet of silt was well saturated with ground water. Accordingly a Moretrench wellpoint system was installed around the hole, with an 8-inch header line laid on the bench slope and connected to a 10-inch discharge line. The 22-foot risers were placed on 4-foot centers around the hole, and two 8-inch pumps were hooked up to lower the water table. When the area had been dewatered sufficiently for digging in the dry, only a single pump was required to maintain this desirable condition. Once the excavation had started, work never stopped until the hole was completely dug.

Gravel Mat

As the material was excavated it was stockpiled for use later either as backfill around the finished building, or for bringing the parking lot to grade. The bottom of the hole was then backfilled with a gravel blanket to a depth of 12 feet. Material was obtained from a pit in East Springfield and hauled to the site in trucks. There it was dumped and spread in 7-inch layers by a couple of D7 dozers which also helped to compact the gravel. Nearly 29,000 yards of gravel was required in building up the mat that came up to 4 feet above the natural water table. From the top of the mat the gravel sloped off to the bottom of the cut on a 1 to 1 gradient. Once the gravel was in, the wellpoint system was removed.

Concrete Foundation

On top of the gravel mat is the 26-inch reinforced-concrete basement floor slab, set 4 feet back from the edge of the compacted fill. Ready-mixed concrete was used throughout the construction, being furnished by two Springfield firms—Construction Service, Inc., and Valentine Concrete Co., Inc. As many as 24 truck-mixers were used on the larger pours, the biggest of which was 630 yards. The foundation slab was poured in seven operations. The truck-mixers discharged their contents into Blaw-Knox concrete buckets which were swung over the wooden

(*Continued on next page*)

$5.22 a ton for Asphalt
IS WORTH SAVING!

The Foote Kinetic Asphalt Mixer will give you 8 to 10 more batches from a barrel of asphalt. One user* has reported savings of $5.22 a ton. They used to buy their material for $10.50 a ton. Now they make it with the Foote Kinetic Asphalt Mixer for $5.28 a ton. $5.22 a ton is worth saving! Such savings will soon pay for your Foote Kinetic Mixer.

You cannot compare the Foote Mixer with an ordinary concrete mixer either from the standpoint of construction or the finished product. Let us send you complete details. Ask for Bulletin K-100.

*Name on request.

- 3 cu. ft. in 30 seconds
- High output for low investment
- Handles any mix
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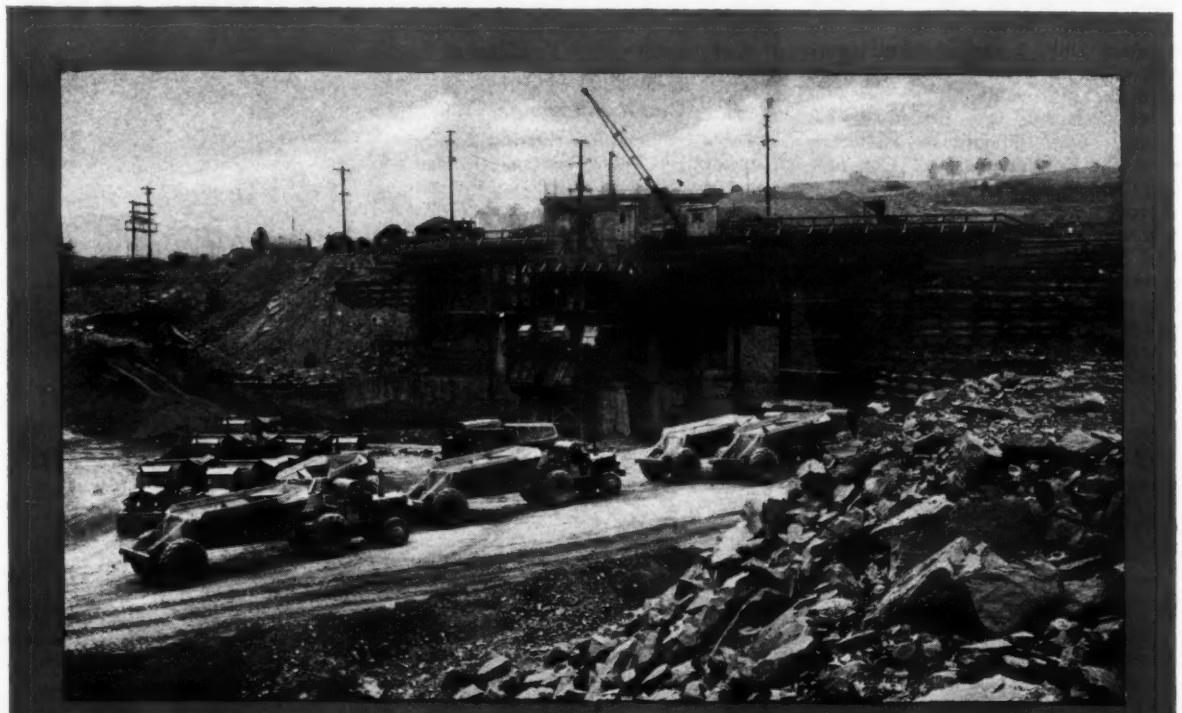
- New mixing principle gives you 8 to 10 more batches out of every barrel of asphalt

the FOOTE Kinetic mixer

THE FOOTE CO., INC.
Subsidiary of Blaw-Knox Co.
1918 State St., Nunda, New York

A BLAW-KNOX PRODUCT



GM Series 71 Diesels power a fleet of 50 Euclid bottom-dumps working for S. A. Healy Co. on construction of 200-ft. high Neversink Dam.

Good Diesels keep good company

Today the list of contractors who operate equipment powered by General Motors Series 71 Diesels reads like a "Who's Who" of the industry.

Big operators like S. A. Healy Co., who have the $25 million contract for New York City Board of Water Supply's half-mile dam across Neversink River Valley, have found what these powerful, efficient Diesels can do.

These modern 2-cycle Diesel engines pack more power in less space—they do their work easily and fast. With power at every downstroke, they deliver high torque that gives them quick get-away and smooth, steady up-grade pull even with a punishing load.

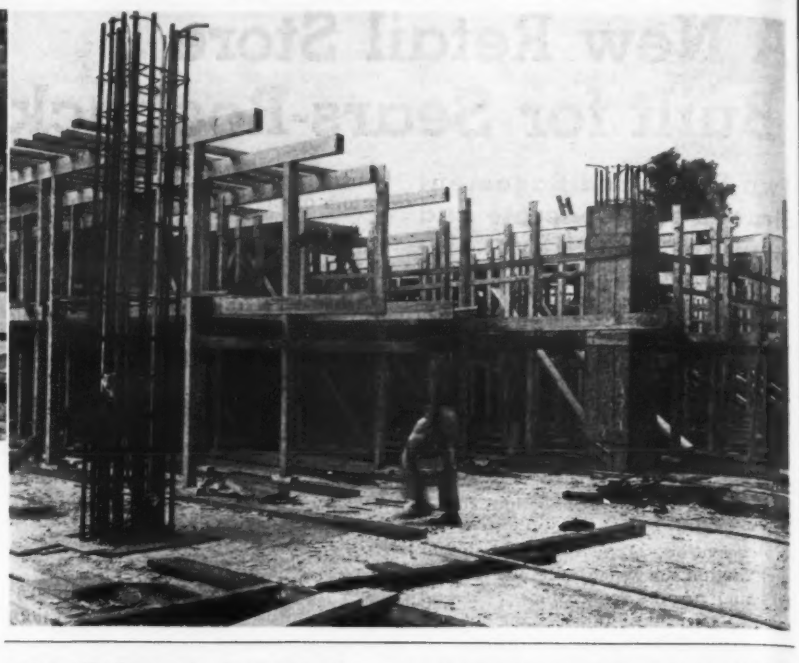
At the same time, these engines are clean in design, easy and economical to service. There's no high-pressure fuel tubing. Injector, pump and fuel-metering mechanism for each cylinder are all in single, easily changed units.

Any machine with GM Diesel power is a better machine—sturdy, dependable, economical. So whatever equipment you buy, it will pay you to specify a GM Diesel engine.

DETROIT DIESEL ENGINE DIVISION
SINGLE ENGINES.. Up to 200 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS.. Up to 800 H.P.
GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER



C. & E. M. Photos

A Ley Construction Co. worker cuts wall forms on a C. H. & E. 14-inch table saw (above). At right, at the basement floor level of the new Sears-Roebuck store building, bare column steel and column steel enclosed by a wooden form. Between columns is the shoring for the first-floor concrete slab.

A New Retail Store Built for Sears-Roebuck

(Continued from preceding page)

forms by the Lorain and Lima cranes equipped with 85-foot booms. On the basement slab, 2-yard buckets were used, while for the wall pours a switch was made to the smaller 1-yard buckets. As the concrete was placed it was vibrated with Maginniss Hi-lectric vibrators. Bethlehem Steel Co. supplied the reinforcing material.

Forms for the 24-inch foundation walls were constructed of ⅝-inch plywood backed with 3 x 6 studs on 16-inch centers, and double 2 x 8 wales held with Star wall ties. Spacing of the wales from bottom to top was 12, 30, 30, and 36 inches. The walls were built in six separate pours, and were later waterproofed with Ironite up to the first-floor level.

The roomy basement contains the boiler room, stockroom, and a large sales area. It has a 1½-inch cement-finish floor, with asphaltic tile added to that in the sales area. The finished floor is at elevation 80.

Crane and Buggies

The 8-inch slab for the first floor was poured on ⅝-inch plywood. For support, wooden 4 x 4 posts were erected on 4-foot centers both ways, set on 2 x 8 sills laid on top of the basement slab. The posts were capped with 4 x 6 joists, over which were laid 2 x 6 stringers on 14-inch centers to support the plywood panels. Column forms were built of

(Concluded on next page)

CARROLLTON *Portable* BATCHER

(PATENT PENDING)

A light weight, rugged batching plant equipped with a special designed THURMAN scale. The plant is easily operated, increases speed of pouring and requires no special equipment. Carrollton plants have been in continuous service for more than a year. Experience data furnished upon request.

Saves Its Cost on First Job

The ideal plant for curbs, gutters, culverts, bridges and patch work.

Bin is fed by using front-end loader. Three men can keep a 16S mixer charged with this plant.

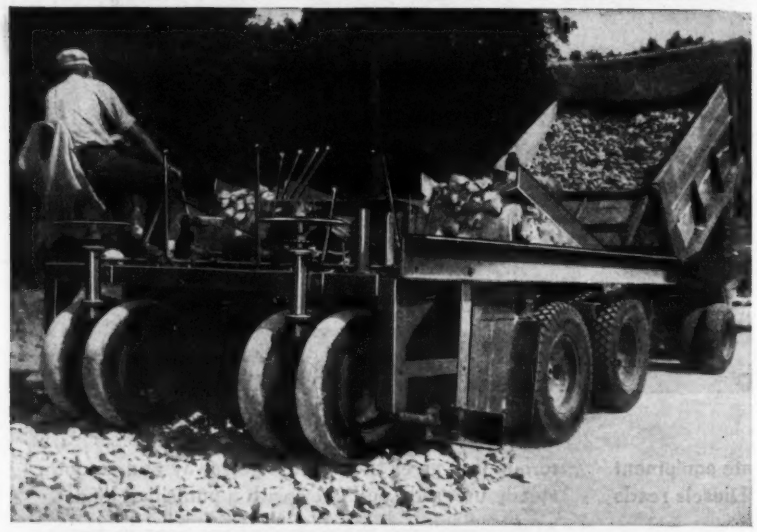
Batcher comes complete with trailer.

DEALER-TERRITORY OPEN

CARROLLTON MANUFACTURING CO.

5350 MONTROSE AVENUE DALLAS, TEXAS

it pays off



APSCO BASE PAVER

This self-powered, "dump-truck pushing" paver can easily handle 160 tons per hour. It's APSCO's newest paver—incorporating years of designing and field experience. Oscillating, leveling screed accurately controls depth, banking and crown. Adjustable spreading width. Practically no hand labor! *Get further details—write today!*

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SAVE TIME . . . SAVE MONEY

Get *All* Your Paving Products from *ONE* Reliable Source

KEYSTONE ASPHALT PRODUCTS CO.

You can depend on Keystone quality and service. Have what you need, when you need it. Save on freight by buying from one reliable source. Benefit by lower prices by combining shipments. Keystone's modern, efficient methods and products require fewer man-hours. You save money every way with Keystone!

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American Road Builders Convention—
Netherland Plaza Hotel
Cincinnati, Ohio
March 6-9

- Asphalt and Fibre Type Expansion Joints
- Tongue & Groove Joints
- Waterproof Base Plates
- Dummy Joints
- Concrete Curing Compounds
- Asphalt and Rubber Joint Sealing Compounds

KAP

KEYSTONE ASPHALT PRODUCTS CO.
A DIVISION OF AMERICAN-MARIETTA COMPANY
43 East Ohio Street, Chicago 11, Illinois

2-inch lumber, and held together by either wooden scabs or Symons column clamps. Much of the form lumber was cut out on a C. H. & E. 14-inch table saw and portable SkilSaws. In the construction of the floor slabs, the cranes handled the buckets as before, but buggies were also used in distributing the concrete. Three separate pours were made for the first-floor slab; curing was done with water.

The first floor, given over to sales area, is at elevation 94. It has a Linotile floor on top of a 1-inch cement finish. The suspended ceiling is 13 feet 3½ inches above the finished floor. Ceiling height in the basement is 12 feet, and on the second floor it is 12 feet 3½ inches. The finished second floor is at elevation 110. It consists of a 5-inch concrete slab with a 1-inch cement finish. Part of this floor is given over to sales, while the rest is used as a stock area. The floor in the sales section is covered with Linotile. Store offices are also on the second floor.

Approximately 6,000 cubic yards of concrete were required for the building, and this was reinforced with 540 tons of steel rods. Structural steel, totaling 450 tons, was supplied by the Haarmann Steel Co. of West Holyoke, Mass. Truscon steel joists were used in the construction above the first-floor level. They are covered with metal lath, and support the concrete slabs.

The 5-inch roof consists of a 2½-inch concrete slab, topped by a 2-inch Zonolite insulation course, and covered with a ½-inch composition 4-ply 20-year built-up pitch and slag material.

The store has oil heat, and is serviced by Westinghouse electric stairways.

Personnel

The Ley Construction Co. employed a force averaging 180 on the construction under the supervision of J. R. MacNair, Superintendent. Charles A. Vaughan is Resident Architect's Supervisor for The Ballinger Co. of Philadelphia, Architects and Engineers, which designed and directed the construction of the store.

C. & E. M. Photo

You're looking along the west wall of the new Sears-Roebuck retail store going up in West Springfield, Mass., for which Ley Construction is the general contractor. Workmen are placing reinforcing steel for the first-floor slab pour.

Folder on Axle Assemblies

A 12-page illustrated catalog, No. 101, describing the complete line of Caravan axle assemblies, as well as component parts and accessories, has recently been issued by The United Mfg. Co., 46 W. Interstate St., Bedford, Ohio.

Specifications are given for both two and four-wheel assemblies designed for the transportation of generators, pumps, tar kettles, concrete mixers, vertical and horizontal drills, fire-fighting equipment, cable reels, poles, compressors, and a wide range of utility service equipment. Data charts provide full specifications for two-wheel axle assemblies having capacities up to 6,000 pounds and four-wheel units having capacities up to 12,000 pounds.

Also described is the new automatic, hyraulic, Titanic brake control which applies the trailer's brakes when the towing vehicle slows or stops. In addition, the new United retractable swivel-caster wheel unit, which has been designed for use with two-wheel trailers, is described. This pneumatic-tired rest-wheel assembly facilitates trailer positioning under heavy loading. The support wheel can be swiveled and retracted into a positive safety position for travel over rough terrain.

A final section of Catalog No. 101 deals with standard and de luxe models of United's all-purpose running gear which are furnished as complete units. They incorporate automotive - type steering, 2-inch solid beam axles, Timken tapered roller bearings, adjustable stakes, and adjustable reach.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 9.

On the Road for Trojan Tools

Hugh B. Winfrey of Chattanooga, Tenn., is now serving as southeastern representative of Contractors Machinery Co., Batavia, N. Y., manufacturer of Trojan road tools. He will travel in the following states, serving Trojan distributors: Kentucky, Tennessee, West Virginia, Virginia, North and South Carolina, Georgia, Alabama, Florida, and Mississippi.

ONE MAN GANG

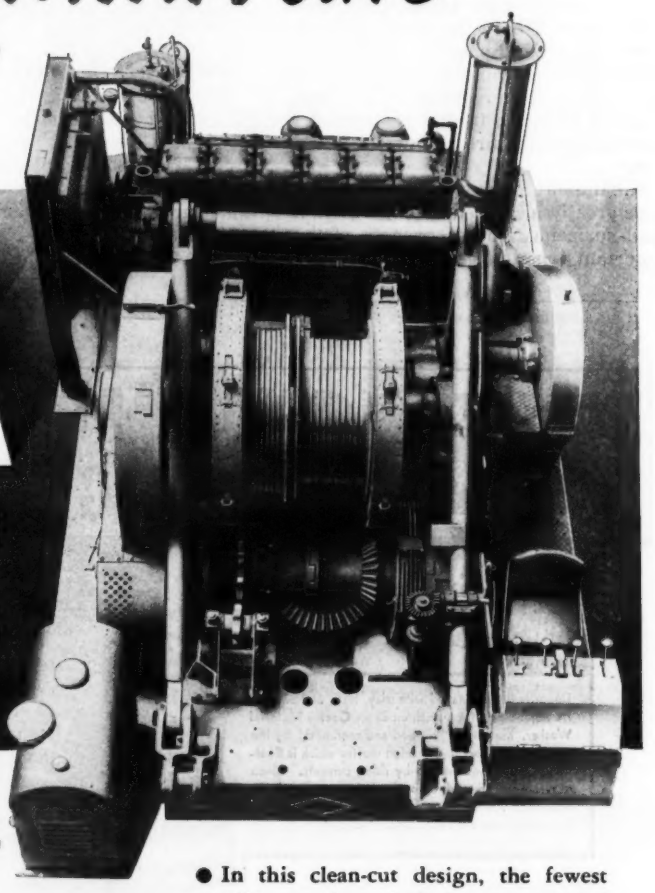
GOLDAK model 87 Featherweight PIPE LOCATOR

Only the Goldak Model 87 offers all these BIG features:
MICROTUNING
PENTODE TUBES
Western Electric License
Strong, positive location signal.
Standard miniature radio tubes and flashlight batteries.
Exact location of buried pipes, mains, gates, tees, etc. Total weight, 11 lbs. — one man operation! Lasts a lifetime — guaranteed performance.

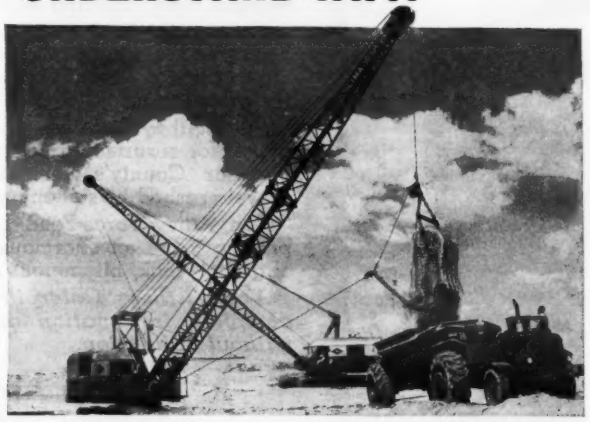
Write for FREE literature

GOLDAK Leading Makers of PIPE LOCATORS since 1931
1500 WEST GLENOAKS BLVD.
GLENDALE 1, CALIFORNIA

Built-in STAMINA cuts "DOWN-TIME" of LIMA Shovels, Cranes and Draglines



EXAMINE THE MAIN MACHINERY AND YOU'LL UNDERSTAND WHY!



● In this clean-cut design, the fewest possible number of shafts are required to transmit power from engine to dipper. Important bearings, including those in the drum, are anti-friction type. Large drums increase output and minimize cable wear. Permanently aligned shafts prevent chattering and grabbing of clutches. Extra-rugged construction of machinery base, truck and front end equipment provides ample strength to withstand heavy loads. These are only a few of the reasons why LIMA machines are making records of outstanding performance with *minimum down-time.*

The LIMA line includes Shovels ¾ to 6 yards, Cranes to 110 tons, and Draglines Variable. Rubber-Mounted units are available with ¾ and 1 yard shovels and 35 ton cranes. Offices in principal cities of the world.

Lima Shovel and Crane Division
LIMA, OHIO
OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*
LIMA HAMILTON CORPORATION

The new Ingersoll-Rand controlled power chipping hammer available in 15 power sizes and 5 basic hammer sizes.

New Chipping Hammer

A line of chipping hammers based on a new design to meet exacting cutting conditions has been announced by Ingersoll-Rand Co., Phillipsburg, N. J. The Controlled Power chipping-hammer line offers a selection of 15 power sizes (with 5 basic hammer sizes) to meet job requirements. Each basic hammer size is available in normal-cut, extra-cut, or super-cut type, thanks to a design variation in one part which is interchangeable throughout the whole line.

The life of the hammer pistons is said to be greatly increased through the new hard-surfacing Iramet process. Other important parts of the hammers subjected to wear are also plated with Iramet to give them longer life. According to the company, the new Airite valve accurately proportions the amount of air fed to the front and rear of the piston to maintain top cutting efficiency under all conditions, provides a smooth flow of full power, and eliminates short stroking and loss of power on heavy cuts. Three types of handles are available; all lock in place. Front-end design allows chisel play-off to make the chipping hammer easy to use and keep operator fatigue to a minimum.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 44.

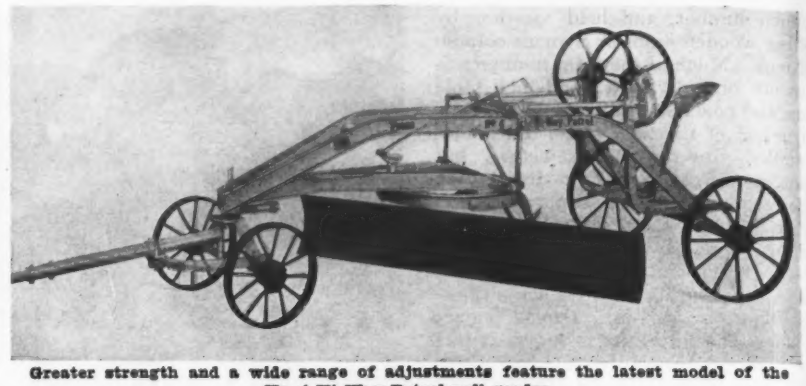
Steel Hacksaw Blade

A flexible high-speed hacksaw blade has recently been offered by the Victor Saw Works, 10 Cottage Place, Middletown, N. Y. Known as Victor Molyflex, this new steel blade is said to be shatterproof and unbreakable when used in a frame. The blades come in an overall gold color with specifications clearly printed on them. They are available in all popular sizes and pitches for hand sawing.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 42.

Improved Pull Grader

The latest model of the No. 4 Hi-Way Patrol pull grader is being introduced through Caterpillar distributors by Preco Inc., 6300 E. Slauson Ave., Los Angeles 22, Calif. The unit's applications include building and maintaining rural roads and rights-of-ways, ditching for erosion control, terracing, snow removal, and many other uses.



Greater strength and a wide range of adjustments feature the latest model of the No. 4 Hi-Way Patrol pull grader.

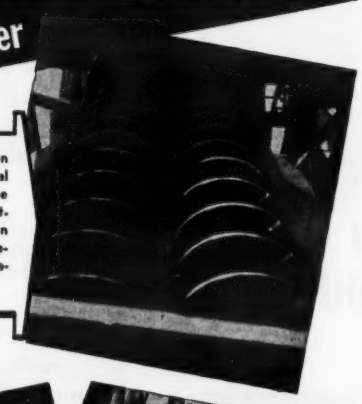
The new model is a sturdier, more streamlined unit, with an 8-foot blade and a wide range of adjustments. The Patrol has an adjustable rear axle and tractor pole, and may be pulled by a small track or wheel-type tractor, truck, or team of horses. Flat spoke or rubber-tired wheels are optional. The frame is of all-welded construction, gears are totally enclosed, and bearings are of a fine dustproof quality, according to the manufacturer.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 22.

WRING MORE PROFITS FROM GRAVEL

with Eagle Coarse Material Washer

Deposits contaminated with clay, loam and silt can be worked profitably with an Eagle Coarse Material Washer. Material is "rubbed and scrubbed," by the screw flights loosening foreign matter which is floated up and out of the tub by rising currents. Clean gravel goes up and onto the belt, clean and dewatered. An Eagle Washer-Dewaterer quickly returned its cost for this Illinois producer.



or Eagle Log Washers

For stubborn cases — cemented aggregates, tough clay balls, soft stone admixtures—Eagle Log Washers are recommended. Often used in conjunction with an Eagle Washer — Classifier - Dehydrator on the sand. Paddles with replaceable, corrugated shoes chop through gummed up material—clay and debris are washed up and out and gravel free of clay goes to gradation, screen or bin. Send a sample from your deposit for analysis and recommendations. Ask for Catalog 47.

SINCE 1872 Progress... Service

SAND AND GRAVEL EQUIPMENT
"Swintek" Dredge Ladders
Screw Washers — Log Washers
Dehydrators — Sand Tanks — Classifiers

EAGLE IRON WORKS
159 HOLCOMB AVE., DES MOINES, IOWA

Athey FORCE-FEED LOADER-PORTABLE BREAKER PLANT "Buys itself," crushing 35 mi. of gravel road

— for Malheur County, Oregon!

This Athey Force-Feed Loader and Portable Breaker Plant is picking-up windrow oversize pit-run gravel, crushing it and depositing it back on the road surface in a single operation—for secondary road resurfacing.

This equipment works directly from windrows made from original road surfacing with necessary added pit-run gravel.

Operating about 6 hours daily, Malheur County's Athey Force-Feed Loader-Portable Breaker Package crushes 100 cubic yards of pit-run gravel, hourly. That means preparing the gravel to resurface over one-half mile per day.

"Our Athey outfit has paid for itself while crushing pit-run gravel for resurfacing 35 miles of secondary road," reports Malheur County's commissioners. (This is compared to gravel crushed by stationary plant.)

The Athey Force-Feed Loader-Portable Breaker Plant is proving to be an enormous money-saver—in the reworking of gravel, rock, bituminous and other surfaces.

Your Athey-"Caterpillar" Dealer will supply you complete information on this streamlined method—without obligation.

ATHEY PRODUCTS CORPORATION
Chicago 38, Illinois

Athey APCOR Products

Athey PORTABLE BREAKER

University Meeting Emphasizes Planning

Highway Engineers Stress Planning, Priority Allocations, And Good Public Relations At Annual Confab

✦ PLANS, priorities, public relations.

If highway engineers do not begin at once to incorporate these terms into their work, toll roads may be needed to close the ever-widening gap between the roads we have and those we need.

That sobering thought was injected into the Second California Institute Conference on Street and Highway Problems, which met for three days beginning January 30 in Royce Hall of the University of California at Los Angeles. Speaker after speaker from widely separated sections of California and the west had apparently arrived independently at the three major needs. But it remained for Neil Petree, Chairman of the Metropolitan Traffic and Transit Committee, Los Angeles Chamber of Commerce, to point out the alternatives.

"I would like to propose that serious consideration be given to the building of toll roads," Petree said. "Their purpose would be to supplement the expanded highway program wherever toll-road operation is consistent with the traffic pattern. Statewide there are instances of practical application. They would be paid for by the users deriving the direct benefit. In the last analysis, toll roads offer an answer to the question of increased taxes."

This is part of the planning which is necessary, he said, adding that the answer is the planning which is done today for the tomorrows sure to come.

Senator Collier Speaks

Over 300 registered delegates at the Monday morning session of the Institute, sponsored by the Institute of Transportation and Traffic Engineering and University Extension, heard from Senator Randolph Collier, Chairman of the Senate Interim Committee on Highways and co-author of the famous Collier-Burns Highway Act.

Senator Collier's talk summarized committee investigations and discussed progress being made under the Highway Act of 1947. While the California Legislature owes the taxpayer the best possible highway system, Collier said, that system was not being built rapidly enough. In general, he said, work is going ahead satisfactorily enough on the primary highways, but county roads and secondary routes are lagging far behind. Better plans by counties, along with the establishment of priorities of construction which are free of all political considerations, were suggested by the Senator.

Senator Collier expressed extreme concern about the ratio of cost between new construction and highway maintenance. Maintenance, he said, commands too high a share of the budget, and more of the road dollar should go into new construction of a type sufficiently high to reduce maintenance costs to a minimum. Too much of today's construction, he warned, was simply a stopgap or hold-the-line measure.

Expressing the thought that there will always be a shortage of highway funds, the northern California Senator touched upon the subject of public relations as one tool which should be used more by the engineer. More tangible evidence of highway benefits is needed by John Q. Public, he said, and the highway engineer is the best man to assemble that information and pass it along.

Collier told the delegates that a big battle is now shaping up in the California Legislature, since the next phase of the Collier-Burns Act will determine the proper allocation of truck taxes. The subject is explosive, he admitted, but the Legislature will meet it head on.

Americanism Stressed

A carefully prepared preface to the themes of planning, public relations, and priorities, which was discussed by R. H. Baldock, Oregon State Highway Engineer and Past President of the American Association of State Highway Officials, dealt with the whole background of The American Way. Baldock warned that the whole concept "of the rights and dignity of the common man" are now in danger, "both from within and without this country."

Baldock told how his home state of Oregon has planned a comprehensive highway network, upon which construction is now being accelerated. Holding that finances were of utmost importance, he told how more and more of the share of highway costs which should be borne by the general public and property owners is being shifted to road users.

Baldock simplified the proper distribution of cost by pointing out that the only two sound factors which govern cost are (1) vehicle-miles and (2) weight. Simplifying the vehicle-mile term still further, Baldock said that vehicle-miles was simply the rental of the highway for the space required for the vehicle. As traffic increases, space decreases and congestion develops. When space and time conflict, accidents result.

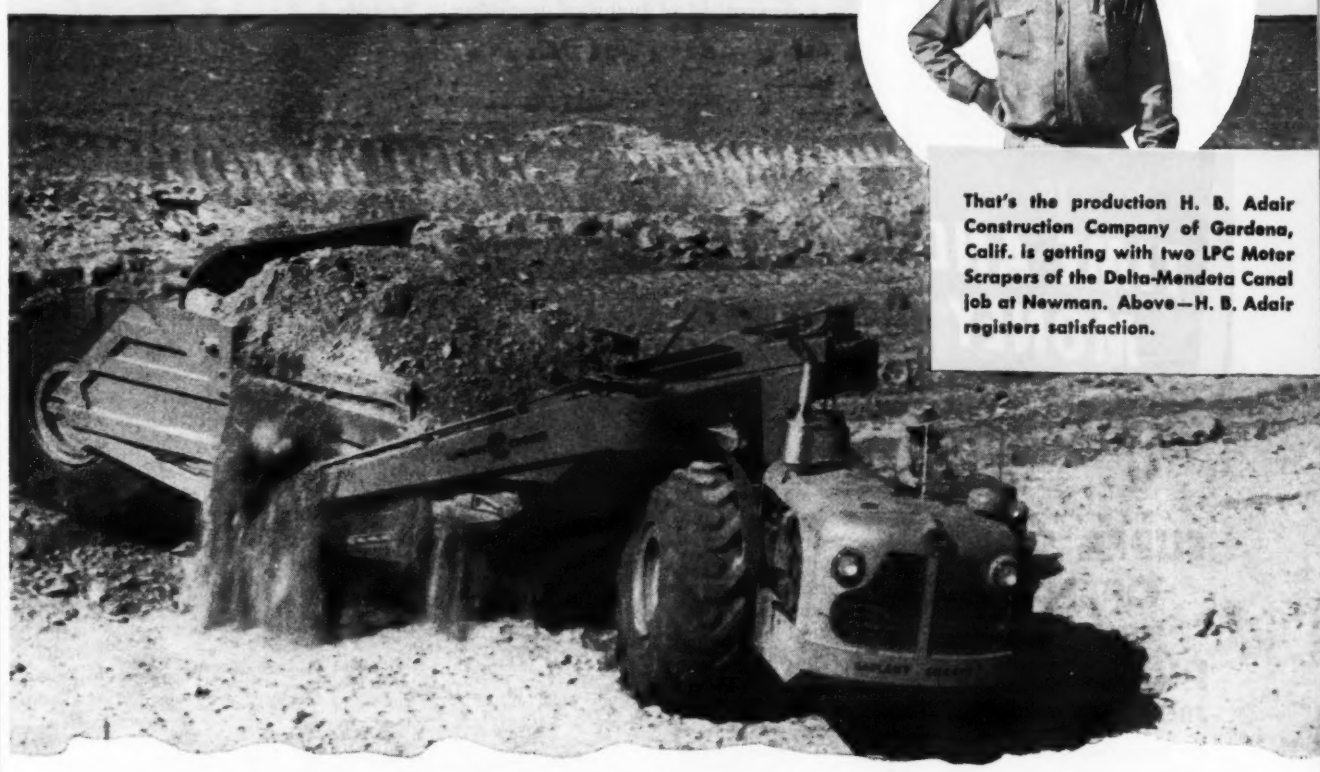
In his analysis of the cost of highways, Baldock said that "it logically follows that a weight-mile tax is the only equitable means of distributing the cost among the users, and that the rate per mile should be graded upward as the size and weight of the vehicles increase."

Baldock also commented upon bills which have been introduced in Congress recently, which provide for the setting up of a Federal-Aid tertiary system of highways, based upon the objective of

(Concluded on next page)

A FULL HEAPING LOAD

Every 3 minutes on a 2600-ft. cycle!



That's the production H. B. Adair Construction Company of Gardena, Calif. is getting with two LPC Motor Scrapers of the Delta-Mendota Canal job at Newman. Above—H. B. Adair registers satisfaction.

LaPLANT-CHOATE MOTOR SCRAPERS

A FEW REASONS WHY YOU'LL EARN MORE WITH LPC

- 225 H.P. Buda Diesel
- 45 H.P. Continental Starting Engine
- 12 Cu. Ft. Westinghouse Compressor
- 32 Amp. Autolite Generator
- Lipe Rollway Clutch—17"
- Fuller Transmission—4A112
- 4 Wheel Timken-Detroit Air Brakes
- Double Acting Hydraulic Steering
- Big Capacity—14 yds. struck—17.5 yds. heaped
- Positive Forced Ejection plus High Apron Lift
- Many Others

WHEN you want *real* earthmoving performance . . . the kind that rings the bell on the cash box . . . follow the lead of H. B. Adair. Make LPC Motor Scrapers *your* first choice to get more profit per yard . . . per job . . . per year.

Fast loading ability and "boiling" loading action cuts seconds off loading time. Rugged power gives the unit authority to travel at top speed up and down grade in all kinds of material. Over 16 H.P. per struck yard of capacity! Speeds up to 21.2 m.p.h.! It adds up to an extra trip or two each hour . . . production that pays off. Steady, slugging performance, shift after shift, piles up money-making yardage, and keeps a penny-wise eye on production costs.

Ask your nearest LPC distributor about *all* the features that let you move dirt faster, at the lowest possible cost per yard. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa—West Coast Branch, 1022 77th Ave., Oakland, Calif

LAPLANT CHOATE

University Meeting Emphasizes Planning

(*Continued from preceding page*)

eventually providing an all-year road to every farm.

"Such an objective cannot be based upon economics," Baldock said. "It must be based upon politics."

Planning Is Detailed

How Arizona has set up a point rating system for all her highways was told by William E. Willey, Engineer of Economics and Statistics. Willey revealed that the Arizona State Highway Department has extended the numerical rating system to include county roads, and that 16 states have adopted the system in one form or another. So impartially does the point method work, he reported, that IBM machines sort the sections of the highway which have the highest priority for construction or reconstruction.

The point rating system is based on a total of 100 points; 35 points are earmarked for highway condition, 30 points for safety, and 35 points for service.

The advantages of this system are numerous, Willey explained. No section of highway in critical need of reconstruction is ever overlooked. The system establishes priorities of construction so ironclad that even the pressure groups respect them, and hearings lately have turned into orderly affairs.

Public Relations Stressed

At county, urban, traffic, construction, and maintenance sessions, the subject of public relations was given emphasis. Neil Petree, who is also President of the Los Angeles merchandising firm of Barker Brothers, likened the subject to a product for sale. At the present time the construction and financing of highways is running into determined consumer resistance, he said, but good public relations will do much to sell the product.

Petree warned, however, that public relations is neither publicity, the release of information, nor access to newspapers and radio. The essence of public relations, he said, is *performance;* performance so outstanding that it gets around and helps to sell itself. Only by a reappraisal of highway departments in general and the housecleaning of some in particular, he implied, could such a result be achieved.

The highway builder today needs more than a general nod from the public, Petree said. He needs overwhelming public support of no uncertain kind.

Telling of basic laws in California which affect the county road administrator, Wallace Boggs of Alameda County said that the centralization of county road authority under one head has proved extremely beneficial wherever it has been applied.

The importance of a laboratory in every county road department was told by Clyde V. Jones, Jr., of San Joaquin County. Jones emphasized that the use of a laboratory would prevent many construction failures with the attendant embarrassment.

Proper laboratory facilities also do much to permit more economical design, give better and more uniform results in field work, make possible the accurate forecasting of the character of materials, and give personnel valuable training, Jones explained.

The meeting ended with a half-day field trip over construction work on structures connected with the advanced system of expressways being built to relieve the traffic bottleneck in Los Angeles.

New Nozzle Gives Even Bitumen Spray

A new type of patented spray nozzle known as the Vee-Jet and said to feature streakless application is now standard equipment on bituminous distributors with full-circulating spraybars made by the Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn. These improved nozzles give an even fan-shaped spray pattern and provide an even distribution of material. Through the use of its patented Pressure Metering Method and Vee-Jet nozzles, the manufacturer guarantees accurate no-streak application of bituminous materials.

Vee-Jet nozzles are made in three sizes: No. 1 for small-quantity discharge, as for light tack and seal coats; No. 2, a general-purpose nozzle for average application rates; and No. 3 to permit higher-quantity discharge for heavier application rates. The company provides an application instruction book with complete guide charts for its new nozzles.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 115.

Catalog on Truck Line

A 24-page catalog on a complete line of ½ to 2-ton trucks is offered by the GMC Truck & Coach Division, General Motors Corp., Pontiac, Mich. Forty-three different models, with vehicle weights ranging from 4,600 to 16,000 pounds, are presented in the booklet. Construction details and features of the General Motors power plants for the light and medium-duty truck line are highlighted.

The Syncro-Mesh transmissions illustrated in the folder are designed to permit clashless shifting. The three-speed transmission is standard on the 100-150 series. The four-speed is standard on the 250-350 series and optional on the 100-150. A five-speed constant-mesh transmission is optional for the 300-350 series. Hypoid rear axles, standard on all models, are said to keep more teeth in contact with the ring gear. Specifications are given for all types and models.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 106.

Portable Welding Curtain

Often it is more economical to have the welder work on site than to bring the job to a welding booth. Where this is the case, portable welding curtains protect other men working in the area and by confining sparks to the immediate area, decrease the possibility of fire.

A circular offered by Standard Safety Equipment Co., 232 W. Ontario St., Chicago, Ill., explains that the StaSafe welding curtain, equipped with grommets for easy hanging, supplies protection where and when it is needed. The curtains can be furnished in any size, yet be folded for compact storage. Materials announced in the bulletin include a fire-resistant chemically impregnated fabric, fireproof duck, and standard-weight asbestos cloth.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 62.

ADDS UP TO TIME AND MONEY SAVINGS

SUPER-VULCAN OPEN-TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

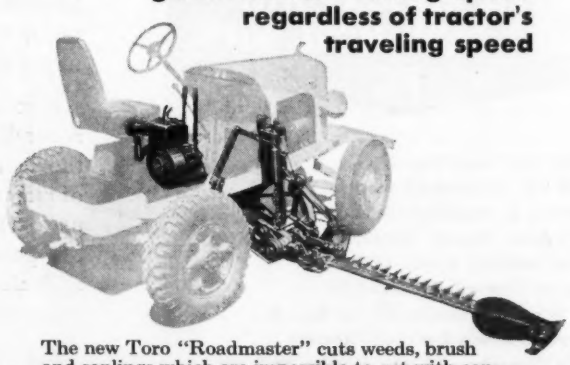
As the piles go down get them there in the fastest time with least effort and with savings in cost. Twice the blows per minute does the job. Each blow takes but one quarter to one third the steam. Things to consider are the rugged strength, positive action, and compactness. The open type fits the same leads and uses the same accessories as the VULCAN single-acting Pile Hammers.

Sizes
18C—30C—50C—80C
meet all needs

VULCAN IRON WORKS Since 1852
329 North Bell Avenue
Chicago 12 ---Illinois

NEW TORO HIGHWAY MOWER CUTS MOWING TIME IN HALF

Sickle driven by *independent engine* gives constant cutting speed regardless of tractor's traveling speed



The new Toro "Roadmaster" cuts weeds, brush and saplings which are impossible to cut with conventional "power take-off" mowers. Its independently powered sickle maintains a constant cutting speed . . . shears through growth up to 2⅜" . . . does a much cleaner job in half the time!

This low-slung tractor sticks on slopes steeper than 35°...mows over curbs from 1½" to 10" high...travels up to 48 m.p.h. between jobs. Fast acting hydraulic lift controls sickle at angles from 45° down to 90° up.

For free literature write:
TORO MANUFACTURING CORPORATION
3089 Snelling Avenue, Minneapolis 6, Minnesota

Sure Protection AGAINST CAVE-INS

SIMPLEX
Drop Forged Steel
TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

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TEMPLETON, KENLY & COMPANY
1006 South Central Avenue
Chicago 44, Illinois

Convention Calendar

March 6-9—ARBA Meeting

Annual Meeting, American Road Builders' Association, Netherlands Plaza Hotel, Cincinnati, Ohio. Charles M. Upham, Engineer-Director, International Bldg., Washington 4, D. C.

March 9-11—Miss. Valley Conference

Mississippi Valley Conference of State Highway Departments, Edgewater Beach Hotel, Chicago, Ill. H. E. Surman, Secretary-Treasurer, Illinois Division of Highways, Springfield, Ill.

March 22-24—N. Y. Highway Engineers

Annual meeting, New York State Association of Highway Engineers, Hotel Hamilton, Utica, N.Y. E. Mercer Weiskotten, General Convention Secretary, 109 N. Genesee St., Utica, N.Y.

March 22-25—Roadside Development Meeting

Ninth Annual Conference on Roadside Development, Departments of State Bldg., Columbus, Ohio. Charles R. Sutton, Department of Architecture and Landscape Architecture, The Ohio State University, Columbus 10, Ohio, or Wilbur J. Garmhausen, Chief Landscape Architect, Department of Highways, Columbus 15, Ohio.

March 23-25—Rivers & Harbors Congress

National Rivers and Harbors Congress and Mississippi Valley Flood Control Assn., Mayflower Hotel, Washington, D. C. William H. Webb, Executive Vice President, 1720 M St., N. W., Washington 6, D. C.

March 28-31—Safety Convention

Twentieth Annual Safety Convention and Exposition, Greater New York Safety Council, Hotels Statler and Governor Clinton, New York City, N. Y. Paul F. Stricker, Executive Vice President, 60 E. 42nd St., New York 17, N. Y.

March 29-31—Utah Engineering Conference

Eleventh Utah Highway Engineering Conference, Union Bldg., University of Utah, Salt Lake City, Utah. Professor A. Diefendorf, Head, Civil Engineering Department, University of Utah, Salt Lake City, Utah.

April 3-6—Ohio Engineering Conference

Ohio Highway Engineering Conference and Road Show, Ohio State University, Columbus, Ohio. Emmett H. Karrer, Professor of Highway Engineering, Brown Hall, Ohio State University, Columbus 10, Ohio.

April 4-7—Corrosion-Engineers Meeting

Conference and Exhibition, National Association of Corrosion Engineers, Jefferson Hotel, St. Louis, Mo. For information, write to NACE Convention Chairman, Jefferson Hotel.

April 10-12—Highway Short Course

South Dakota Highway Short Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, Professor of Civil Engineering, South Dakota State College.

April 10-13—Purdue Road School

Thirty-sixth Annual Purdue Road School and Road Show, Memorial Union Bldg. and Armory, Purdue University, Lafayette, Ind. Prof. Ben H. Petty, C. E. Bldg., Purdue University, Lafayette, Ind.

April 25-27—Transportation Congress

Third Highway Transportation Congress. National Highway Users Conference, Hotel Mayflower, Washington, D. C. Arthur C. Butler, Director, National Press Bldg., Washington 4, D. C.

April 26-29—ASCE Spring Meeting

Spring Meeting, American Society of Civil Engineers, Ambassador Hotel, Los Angeles, Calif. Ray L. Derby, General Chairman of Arrangements, Box 3669 Terminal Annex, Los Angeles 54, Calif.

June 26-30—ASTM Meeting

Annual Meeting and Ninth Exhibit of Testing Apparatus and Equipment, Chalfonte-Haddon Hall, Atlantic City, N. J. C. L. Warwick, Executive Secretary, 1916 Race St., Philadelphia 3, Pa.

Oct. 15-22—Pan American Highway Congress

Fifth Pan American Highway Congress, Lima, Peru. International Road Federation, 550 Washington Bldg., Washington 5, D. C.

Safety Soars for Engineers

Four years of major construction activity without a fatality—in 1948, 1,898,332 man-hours worked with only 12 disabling injuries—in 1949, 1,182,096 man-hours with only 7 disabling injuries. That's the safety record which has been chalked up by the Denver District of the Corps of Engineers, and for which it recently received the annual award for the best safety record of any of the five Engineer Districts in the Missouri Basin. The plaque was presented by Brig. Gen. S. D. Sturgis, Jr., Missouri River Division Engineer, and accepted by Lt. Col. L. J. Lincoln, Denver District Engineer.

Word comes too from the Galveston District that 1949 was one of its safest years. It completed 7,000,000 man-hours of construction work throughout Texas with only 11 injuries per million man-hours. Latest average of the construction industry is 16.51 accidents per million man-hours.

Link-Belt Branch Store in K. C.

Link-Belt Co. of Chicago, Ill., has opened a factory branch store and warehouse in Kansas City, Mo., at 2630 Holmes St., to carry parts for conveying and power transmission machinery, chains, sprockets, bearings, speed reducers, elevator buckets, etc. The two-story building has a total floor area of 13,200 square feet, and an adjoining lot with a 75-foot frontage provides plenty of parking space.

Vice President of FWD Dies

David J. Rohrer, Vice President of The Four Wheel Drive Auto Co., and a director of the company since its organization in 1910, died recently. A Clintonville, Wis., lumberman, Mr. Rohrer became interested in the principle of four-wheel drive as he watched the two inventors Otto Zachow and William Besserdich manufacture the first FWD unit in 1908. He was one of the organizers of the company and its first treasurer, a position he held until two years ago when he was elected Senior Vice President of the firm.

"BERG" Concrete Surfacer

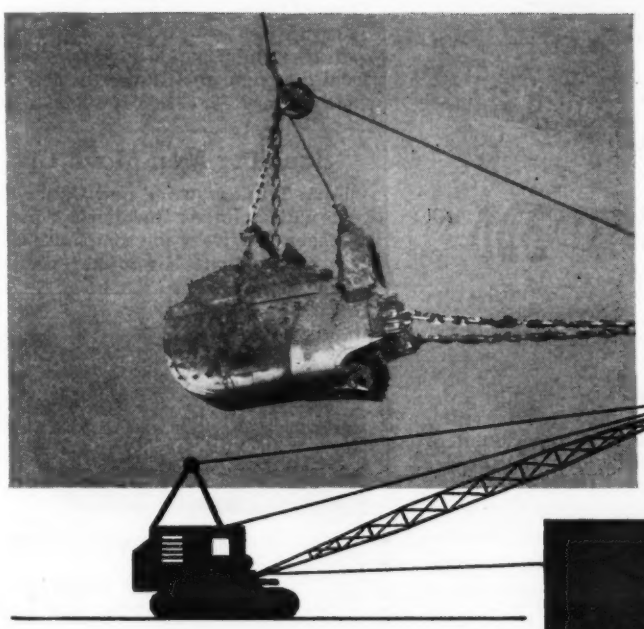
A light-weight, portable, electric motor-driven Concrete Surfacer consisting of the Model R-2 Right Angle Head and Model AS Motor Unit.

Ideal for surfacing concrete construction and other applications.

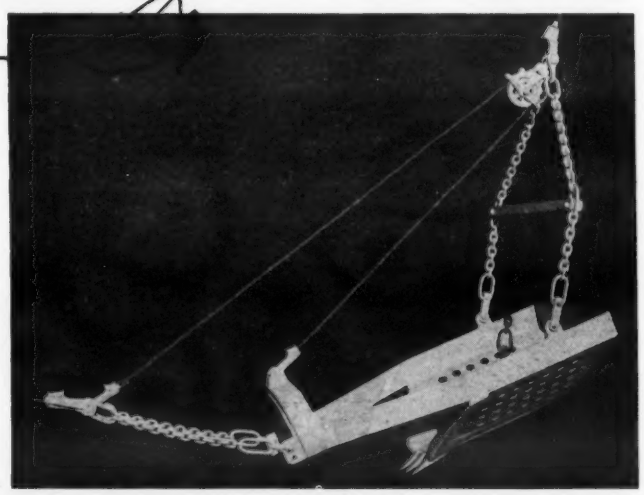
Quickly converted into the Model V2-AS Concrete Vibrator for Internal vibration by substituting the Model V2 Vibrator Unit for the above Head.

The Concrete Surfacing Machinery Co.
4665-4669 Spring Grove Avenue, Cincinnati 32, Ohio

YAUN'S DIGGING PAIR FOR BIGGER PROFITS



Yaun's Dragline Buckets—either solid, perforated or basket type—fill faster, dump cleaner and quicker because of their unique design and size-to-weight ratio. Engineered for perfect balance means easier handling for your operator. All buckets available in three weights: light, medium and heavy duty.



Yaun's "Contractor's Ditching Bucket" is another step forward in reducing costs for contractors. Scientifically designed, this bucket digs shallow wide sloping ditches in the sizes needed for the job. Available in sizes from ½ to 1 yard in medium duty weight. Write for full details on this new bucket.

YAUN WELDING AND DRAGLINE BUCKETS, INC.
BATON ROUGE, LOUISIANA

Combination Forms Are Used in Tunnel

B. Perini & Sons, Inc., is using combination forms for the concrete lining in the Squirrel Hill Tunnel of the William Penn Parkway which will soon traverse Pittsburgh, Pa.

Three sections of Blaw-Knox telescopic combination forms, each 50 feet 4 inches long, are being used for simultaneous pouring of sidewalls and arch. And one Blaw-Knox traveler is being used for the placement, collapsing, and transfer of these sections. A traveler and four sections of Blaw-Knox telescopic forms will also be used in pouring the ceiling, a process which will follow the lining of the sidewalls and the arch.

Concreting operations were initiated on the eastern end of the 3,785-foot north tube and were scheduled to proceed at the rate of one 50-foot pour a day. After the north tube has been lined, the south tube, 3,895 feet long, will be concreted in the reverse direction. After concreting, the sidewalls will be tiled to the ceiling;the roadway will be concrete overlaid with brick.

This photo shows Perini crews setting up Blaw-Knox combination sidewall and arch forms on a traveler outside the north tube of Squirrel Hill Tunnel.

A New Jetting Pump

Announcement of its new Model 150 self-priming jetting pump has recently been made by the Sterling Machinery Corp., 405 Southwest Blvd., Kansas City 8, Mo. This high-pressure pump is designed for pile-driving jetting, bank washing, ponding, caisson work, dewatering operations, fire fighting, and mud pumping during drilling.

The pumps are primed rapidly by engine exhaust, and are available in both single-stage and multi-stage models. The Model 150 is powered by a Waukesha 6 BZU engine and is usually mounted on a welded steel skid base; it can also be furnished with steel-rim pneumatic-tired wheels. Ratings for this pump under jetting operations range from 544 gpm at 75 psi to 104 gpm at 190 psi.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 28.

Roebling Men Move Up

E. A. Trask assumed new duties this year with John A. Roebling's Sons as Manager of Sales of the company's Chicago corporation. His former position as head of the San Francisco office of John A. Roebling's Sons Co. of California has been filled by G. C. Bukowsky, who used to manage the Portland, Oreg., branch. Both men have been with the firm for 25 years.

Literature on Dump Bodies

Folders describing light-duty, medium-duty, heavy-duty, and special low-mounting hoists and dump bodies are available from The Marion Metal Products Co., of Marion, Ohio.

The catalog on low-mount bodies explains that the 6½ to 8½-inch mounting heights of the hoists are designed to make these bodies particularly adaptable for refuse and rubble loading from a ground position. Illustrations show the variety of body types available with the medium and heavy-duty hoists. Specifications, dimensions, and features are given.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 59.

Presenting the FIRST and ONLY

controlled power

completely safe

semi-silent

Powder-Actuated Fastening Tool!

The DRIVE-IT

Here's the powder-actuated fastening tool every contractor has been waiting for! It embodies all of the features our customer-users have requested . . . and more.

With the introduction of DRIVE-IT "300", the powder-actuated tool "comes of age". It's a streamlined beauty with such features as automatic extension barrel, flangeless drive-pins, controlled power and 40% greater penetration. It is as safe as a screwdriver, and retains all of the time-saving, money-saving advantages of this amazing fastening method.

Clip the coupon now and get the full story on the DRIVE-IT "300". It will be money in your pocket!

U. S. Pat. No. 1,984,167 2,406,978 Other Patents Pending

DRIVE-IT "300"

DO IT WITH DRIVE-IT!

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Plant maintenance. Hanging shelving, signs, etc.

exclusive features of the DRIVE-IT "300"

Controlled Power with one powder charge

3-Way Safety • Most of the BANG is out!

Flangeless Drive-pins

Permanent, Adjustable Safety Pad

Fires with a "Twist of the Wrist"

Distributors Coast-to-Coast

POWDER POWER TOOL CORPORATION

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Canadian Distributors: AMMO-POWER TOOL CO., LTD. Foot of McLean Drive, Vancouver B. C., Canada

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You bet I'm interested . . . Send me the story!

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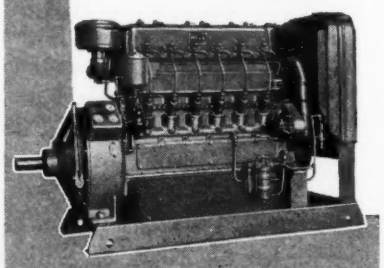
CONTINUOUS DEPENDABILITY for over 50 years

POWER UNITS

12 to 60 hp

2, 4 and 6 cylinders



HILL DIESEL

HILL DIESEL ENGINE CO.

LANSING, MICH.

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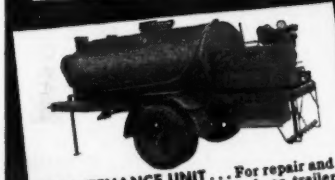
ROAD and STREET CONSTRUCTION and MAINTENANCE EQUIPMENT

BITUMINOUS DISTRIBUTOR . . . Streakless application with pressure constantly and automatically maintained.

STREET FLUSHERS . . . Truck mounted or 2-wheel trailer type. Standard or custom built.



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STREET CLEANER . . . Settles dust as it cleans. Sweeps and washes the street.

OTHER ROSCO PRODUCTS: Road brooms—traction or powered . . . tar kettles . . . power pumping units.

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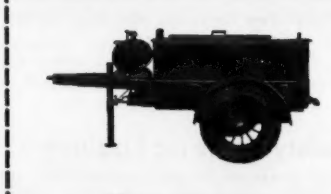
Ask Your ROSCO DEALER or write the factory for literature.



ROSCO TAR KETTLE

For heating and melting asphalt, pitch and all types of bituminous materials. Welded all-steel construction.

This is the Hy-Rate battery cell tester, No. 17. It shows at a glance the condition of any 6-volt battery.

New Meter Checks Defective Batteries

The Hy-Rate battery cell tester No. 17, manufactured by General Scientific Equipment Co., 2700 W. Huntingdon St., Philadelphia 32, Pa., instantly shows the condition of a 6-volt battery. The double-scale meter, calibrated 3-0-3, is ruggedly constructed, and designed to detect any weakness in a battery cell.

Prods are adjustable and will fit the terminals on any battery. One prod can be moved in a specially designed slotted holder to obtain proper spacing to test batteries with cells mounted lengthwise. The full-size colored dial has a long scale for easy reading. "Dead, Discharged, and Charged" scale markings enable anyone to read the battery condition at a glance. A special light illuminates the dial in dark places and goes out when the cell is dead, dims when the cell is low.

Further information can be secured from the company. Or use the Request Card at page 16. Circle No. 101.

Clay-Pipe Coupling

A new Tylox flexible rubber coupling for vitrified-clay pipe joints has recently been announced by the Universal Sewer Pipe Corp., 1500 Union Commerce Bldg., Cleveland 14, Ohio. The rubber coupling joints are flexible in angular and lengthwise movement, and are designed to permit full usage without leaks or pipe failure.

The Tylox joint is used only in the socket end of the pipe; the spigot is plain. Assembly is quickly and easily accomplished by shoving home the spigot into the Tylox coupling. The couplings are resilient and successfully meet dimensional variations of conventional pipes, according to the manufacturer. Tylox rubber, a material specially compounded for corrosion resistance, is said to be unaffected by sewage and acid wastes.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 78.

Lift-Capacity Ratings Increased for Excavators

An increase in lift-capacity ratings was recently announced by the Koehring Co., of Milwaukee 10, Wis., for three sizes of excavators currently produced by the firm. In published specification charts, maximum capacity of the Model 304 Koehring excavator has been established at 13.9 tons with crawler mounting, and 25 tons on both the rubber-tire-mounted truck and cruiser cranes.

The new specifications also show an increase for the crawler-mounted Model 605 machine, which is now listed at 36 tons. The lifting capacity of the Model 1005, latest addition to the Koehring line of heavy-duty excavators, has been tabulated at 79½ tons maximum.

Copies of these new specification charts may be obtained from the company, or by using the Request Card at page 16. Circle No. 3.

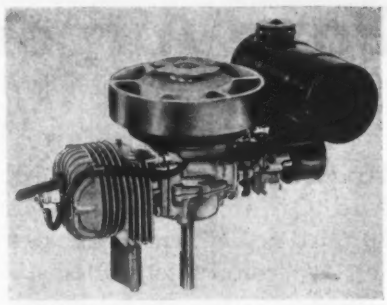
Road-Mix Machines

A 4-page catalog featuring two self-propelled road machines, the Pulvi-Mixer and the Trav-L-Plant, has recently been prepared by Seaman Motors, Inc., 305 N. 25th St., Milwaukee 3, Wis. It describes the design and construction of the units, and highlights their versatility in road-mixing operations. Photographs show the Pulvi-Mixer on the job mixing soil-cement, macadam, calcium chloride, lime and bituminous materials. The Trav-L-Plant has the same features, with the addition of a spraybar, pump, and tachometer. A cross-section diagram illustrates the application of a bitumen or water, prior to the mixing, immediately ahead of the mixing rotor. Full specifications are given.

This literature may be secured from the company, or by using the Request Card at page 16. Circle No. 141.

A New 1-Hp Engine Has Vertical Drive

A new 1-hp gasoline engine with vertical drive has been developed by Power Products Corp., Grafton, Wis. The new Model 200, which weighs 14 pounds, is similar in design to the company's standard vertical-shaft 1-hp Model 2000. It is expected to have special appeal for manufacturers of rotary power mowers. The Model 100 represents a modification of the horizontal-drive 1-hp Model 1000.



Vertical drive and weight of 14 pounds mark the Model 200 1-hp gasoline engine made by Power Products Corp.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 45.

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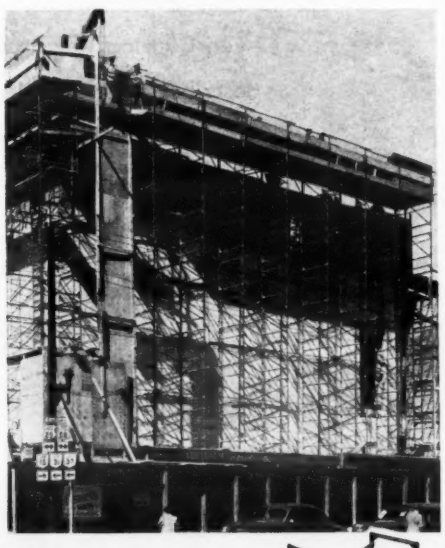
Tubular Steel
SCAFFOLDING
and
EQUIPMENT
gets the job done
FASTER
SAFER
EASIER



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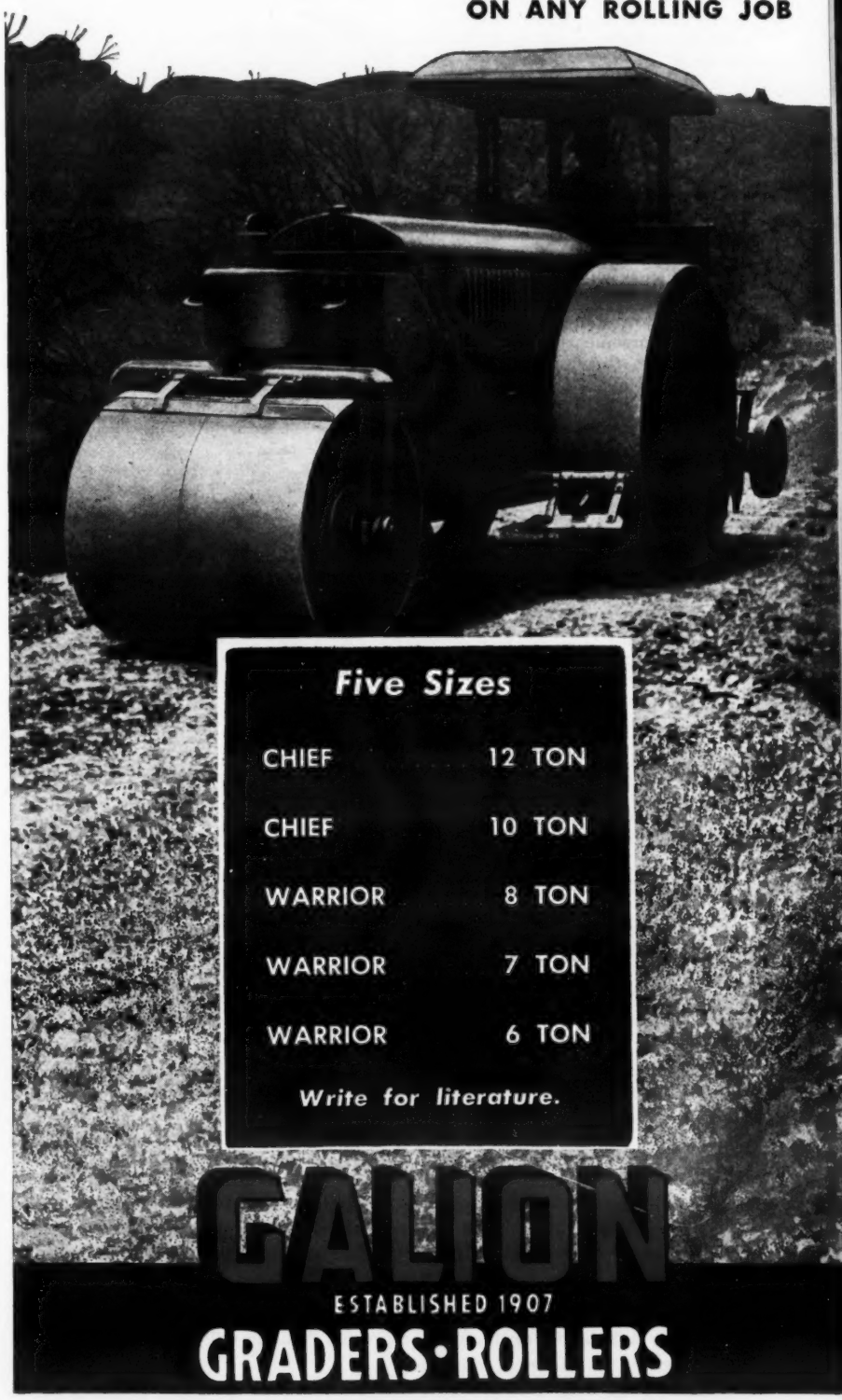

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Pave Airport Runway In 20 Working Days

Taxiway, Parking Stand, And Other Work Is Also Included in Impressive Concrete Performance

✦ IT used to be a favorite pastime of public-relations officers, every time a Seabee battalion filled up a few bomb holes in established Jap airfields, to broadcast to the world that "the Seabees built an airport in 20 hours". In some of these cases very little work was required, and nobody smiled more broadly than the Seabees themselves over what passed for facts during the late war.

But it *is* a fact that a civilian contractor, at Hastings, Nebr., pushed the paving part of a big airport job to completion in only 20 days. The $223,000 project, built under a contract with the City of Hastings, was no small undertaking. Over 50,700 square yards of 7 and 8-inch plain portland-cement concrete paving was placed in that time, and peak daily runs of 3,330 square yards were made.

In the short working period, while Mother Nature withheld her rain, Abel Construction Co. of Lincoln built a new N-S runway 4,000 x 100 feet, some 870 feet of 40-foot taxiway, and a 150 x 135-foot parking apron. During this time there was also some sand-cushion work under way, as well as shoulder preparation and minor grading.

Abel's work will make for Hastings a Class III airport, and commercial airlines are now understood to be negotiating arrangements to bring air service to this thriving south-Nebraska town of 16,000 people.

Concrete Has Thickened Section

Concrete in the main runway section is all 7-inch plain, except for a portion near the center, where a future runway is expected to intersect. Here the slab has an 8-inch thickness. The concrete is also 8 inches thick in the apron and taxiway, and for 400 feet on the south end of the runway.

Designed by the Lincoln architectural firm of Harold Hoskins & Associates, Inc., the pavement rests on 6 inches of sand cushion, found in a pit a few miles from the airport. The entire 4,000-foot runway is only 4 feet higher at one end than the other, and the straight crowned slope drains off any water to a natural swale about halfway down the runway. This natural watercourse solved all the drainage problems but fast when the plans were being made.

The direction of the runway is practically north-south, there being about a 3-degree declination to the east. Prevailing winds usually sweep the runway from one end or the other.

Grading and Sand Subbed

Grading to shape the runway in this flat land was a minor item. Abel sublet the dirt to Theisen Brothers, who used tractor equipment and sheepsfoot rollers to do all necessary earth-moving. The 6-inch sand-cushion work was subbed to M. M. Lippincott of Hastings, who trucked in the sand from a pit 5 miles distant. The material was spread in two lifts, watered, and rolled by pneumatic and smooth-wheel rollers.

Excellent densities in the clay subgrade were reported by Resident Engineer Norris Luedtke, who said 95 per cent modified weights were obtained without exception. The sand cushion was also placed as tight as possible.

Forms and Preparation

Abel Construction Co. used approximately 2,500 road-feet of Blaw-Knox 9-inch steel forms to shape the edges of the concrete slabs. They were set at least 1,000 feet ahead of the paver, and the crew managed to keep all available forms completed ahead each night. The 9-inch forms were set down in a mechanically cut trench so their tops would be either 7 or 8 inches above the sand base.

Only 8 men were used to grade and set the forms. This was a hard-working fast-moving crew. Two men lined the forms as fast as they were set, and drove the steel pins into the ground, using 10-pound sledges. The base of each form section was then tamped by a Cleveland form-tamping machine, and a man brush-oiled the steel sides,

(*Continued on next page*)

C. & E. M. Photo

Action! Abel Construction Co.'s big Koehring paver drops a bucketful of concrete on a sand-cushion subgrade at the Hastings, Nebr., airport.

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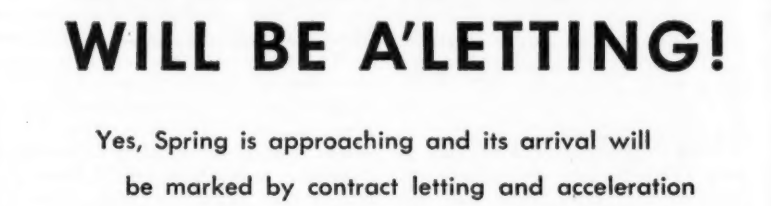

CONTRACTS WILL BE A'LETTING!

Yes, Spring is approaching and its arrival will be marked by contract letting and acceleration of jobs under way. Since profitable operations today are more dependent than ever before upon efficient tools, alert contractors will be giving thought to the purchase of essential new equipment. In this connection you should have a copy of the new Owen Catalog. It not only illustrates and describes the comprehensive line of Owen Buckets and Grapples but contains many photos of equipment applications that will be interesting and helpful. Write today for your copy.

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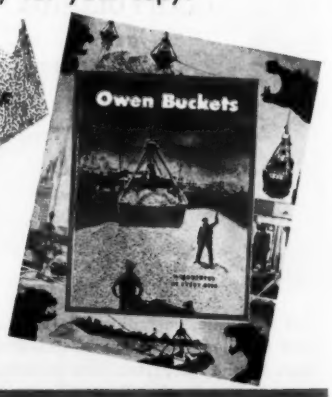
Owen Buckets and Grapples



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using regular form oil.

The sand cushion inside the steel forms was then shaped by a Caterpillar No. 12 motor grader and a tail blade. There was very little excess material after Lippincott had finished his part of the work, but what little there was went on ahead to be used. After the fine-grading had been done, the forms were re-checked for line and grade, and the sand cushion was rolled by a Huber 3-wheel steel machine.

Paving Joints

The pavement consists of standard 25-foot-wide lanes, divided by expansion and contraction joints. The center longitudinal joint in the runway, at the apex of the crown, is only a formed key joint, with no dowel pins. The other lanes are joined by a formed key 3 x 2 inches, plus ⅝ x 30-inch steel dowel bars placed on 30-inch centers.

Contraction joints at 20-foot centers consist of strips of thin mastic, set by a Flex-Plane machine, with steel dowels below. Expansion joints consist of ¾-inch cornstalk and mastic material placed every 400 feet, and reinforced by steel dowel bars 1 inch thick placed every 12 inches. One end of these dowel bars is greased, to permit the slab to move while the steel takes the load transfer. The expansion-joint material is supposed not to extrude under pressure.

The dowel bars for the expansion joints were pre-arranged with the mastic material in a reinforcing jig, and the entire piece was then set in place on steel chairs.

A rather unusual device was used to install the steel dowel bars under the longitudinal Flex-Plane joint in the middle of each slab. This consisted of a U-shaped steel fork, with a marker to show when the bottom of the prong was in the concrete to its proper depth. A man working in rubber boots right behind the spreader installed the dowels as the machine made its first move forward. A supply of the steel was kept available in two compartments on the machine.

Batch Plant in Town

The concrete batching plant and the bulk-cement silo were erected in Hastings, on siding tracks of the Burlington Railroad. All concrete materials had to be shipped in. Sand and aggregate in one size arrived from a commercial plant in Graveldale. Ideal bulk cement from Superior, Nebr., was used.

C. & E. M. Photos

At left, Abel's cement silo—a Johnson—takes bulk cement along the railroad track. The batch-plant set-up above is Blaw-Knox, with a Koehring crane.

As the aggregate cars arrived in Hastings, they were spotted beside a Blaw-Knox 100-ton manual-type concrete batch plant. A Koehring 502 crane with a 1½-yard clamshell bucket moved the material either direct to the bins, or to a stockpile on each side of the plant. The 20-foot area between the plant and the railroad track was reserved for a clam runway, so it could move back and forth to unload the cars.

About 10 Ford trucks hauled the batches away from this plant. Each truck hauled 2 batches at a load. The batch bins were cleverly arranged, with a cement pocket attached to the center-compartment division baffle, and one to the truck tail-gate. This separate compartment let the trucks go out to the job with the cement separate for each batch, and it also prevented the wind from blowing away some of the fine material.

The cement was handled through a Johnson 250-barrel silo, with a built-in screw feed. Cement in hopper cars came in to a railroad spur about 250 feet away from the one on which the batch plant was located. After being stored in the cement silo, the material was weighed out and dispensed to the trucks, to match the sand and aggregate for a 1¼-yard batch.

All cement and aggregate batch-truck hauling was done by the Tilden, Nebr., firm of Pennwell & Deckert. This organization has done all of Abel's hauling for a long time.

Fast Concrete Paving

To illustrate how fast the small paving crew worked, the Koehring Unibatch paver broke a skip cable the day this magazine's western editor visited the project. It had never happened before, because the operator had always caught it before it wore out, and replaced it while the machine was idle. When this interruption came, the batch trucks stayed right there and in exactly 22 minutes the heavy cable was replaced and the machine was again running. That is fast rigging in anybody's language.

With the exception of several lanes in the parking-apron area, where the Koehring paver had to work on the sand cushion, it was always possible to

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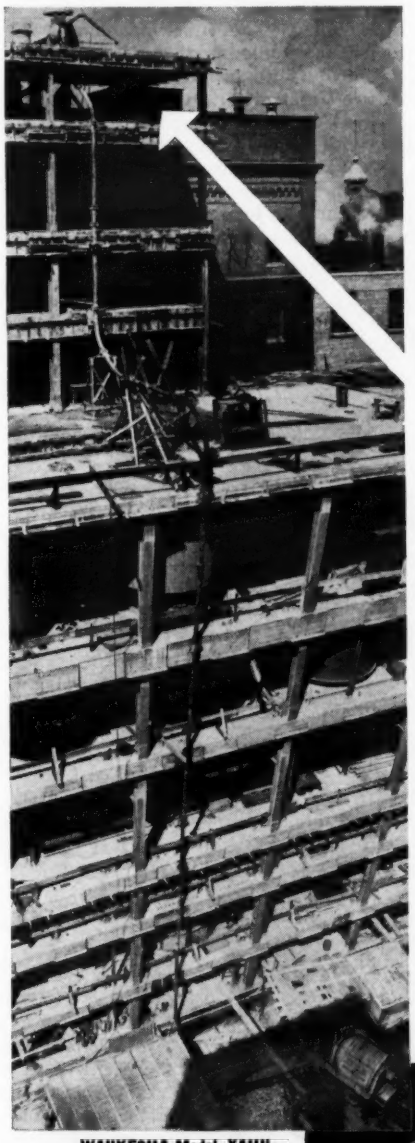

9 STORIES UP!

...A NEW RECORD FOR PUMPING CONCRETE

● *Powered by its Waukesha Engine,* a Rex 160 Pumpcrete recently broke all records in Milwaukee for concrete elevation and placement for this size concrete pump.

The concrete was lifted to 160 ft., nine stories from the ground to a roof pouring job on a brew house addition of Schlitz Brewing Co. Total pour, 5000 yds. with Waukesha power pushing it through the 6-in. pipe at an average of 18 cu. yds. per hour.

Contractors Edward Steigerwald & Sons, Inc., own and operate the Pumpcrete which was purchased from Hunter Tractor & Machinery Co., Milwaukee.

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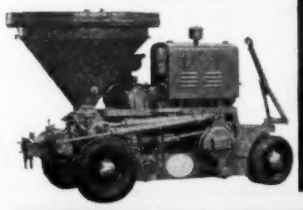

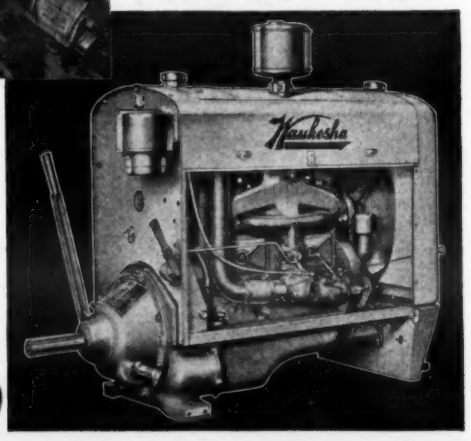

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Pave Airport Runway In 20 Working Days

(*Continued from preceding page*)

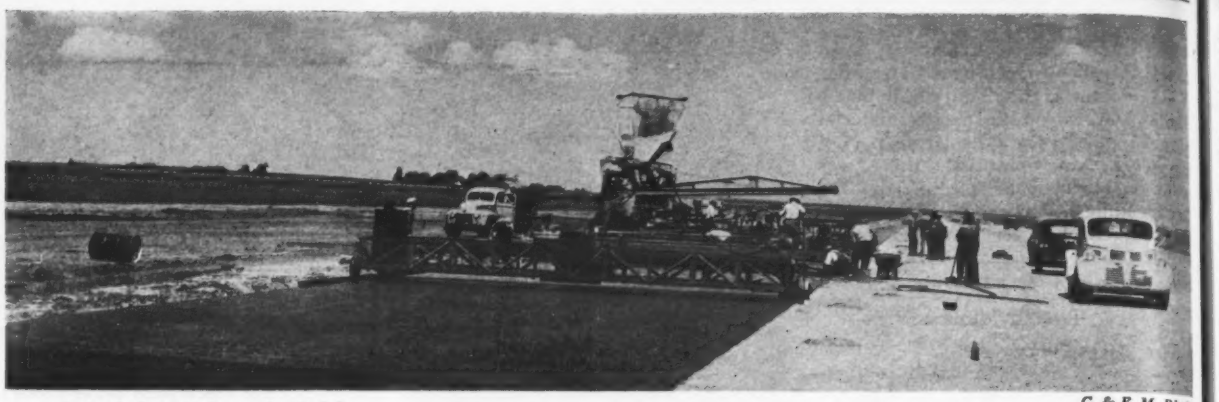
work outside the forms on bare ground. Using a 35-foot boom, the big machine was able to reach the far end of the slab at all times.

The 72-second cycle began after a batch truck had dumped a 37-cubic-foot batch into the paver skip. The skip then dumped into the mixing drums, actuating a Darex AEA dispenser as it did so. Mixing water was hauled from Hastings in two 1,120-gallon truck-mounted tanks.

Both the dispenser hook-up and the water tanks were somewhat out of the ordinary. Manufacturer plans for the installation of the Darex dispenser showed it fastened to the skip shaft, which theoretically should then revolve to actuate it. On a 34-E Koehring Uni-batch paver, this shaft does not revolve, however, so the scheme would not work and Concrete Superintendent Arnold Larson had to figure some other way.

Larson has been around concrete paving since 1922, when he was a youngster, so he had some fair ideas. He welded a U-shaped cleat around the stationary skip shaft, in such a way that the end of the shaft boxing stuck down between the two metal straps. Thus when the skip now rises, it actuates the dispenser to squirt a charge of Darex into the drum.

Materials for the water tanks were prefabricated and cut by a Lincoln steel company. The panels were then welded in Abel's shop. The resulting water tanks were mounted on 4 x 4 wooden frames, so they would rest true and level in a truck bed. A cable sling on each tank lets it be unloaded by a crane when the tanks are not in use, thus relieving the truck for other work.



C & E. M. Photo

The entire paving line-up, seen from the rear, on the Hastings, Nebr., airport job.

The concrete was mixed with an entrained-air content of approximately 5 per cent. The batches were then dumped on the sand base, which was sprinkled just ahead of the operation by water from a sprinkler hose. As a rule the first concrete was dumped against the far side of the form; then the operator built against this batch until a short course had been completed between the forms. The first machine, a Blaw-Knox spreader, then moved up to distribute the material.

Viber electric vibrators were mounted on special brackets on each side of the Blaw-Knox concrete spreader. When the machine traveled forward, the operator pressed a button and the vibrators leaped into action. When the machine backed up, he pulled a short lever near by, and the vibrators were raised out of the concrete, so they would not bind or hang up.

The steel dowels for the longitudinal joints were also placed just behind the spreader as it moved along.

Directly behind the spreader was a Blaw-Knox finisher. It put the first finish on the slab, and swept excess material ahead where the spreader could move back and pick it up. This machine made several passes over the fresh concrete in order to smooth it down and finish it properly.

A Flex-Plane machine was the next in line. Its job consisted of the installation of 2-inch mastic material down a center longitudinal joint, and the cutting on 20-foot centers of dummy contraction grooves, which also received

(*Concluded on next page*)

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Contractors using AJAX Portable Drinking Water Tank and AJAX Paper Cups tell us they save man-hour cost and speed production. Workmen are protected from infections. Tank holds 5 gallons—AJAX Steel Dispenser holds 300 cups.

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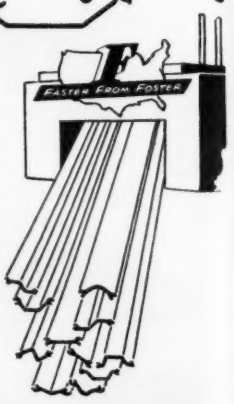

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thin mastic material.

A Koehring float then came along, and put the last mechanical dressing on the slab. It was followed by a small force of concrete finishers, who used long-handled floats to give the surface a cross-grain pull. The edges next to the steel forms were rounded with edging tools, and after two men had given the slab a final belt-pulled finish, one man dressed the edge with a brush.

A Flex-Plane automatic spray machine sprayed Hunt Process curing solution on the slab, and for all practical purposes that finished the paving.

Some exceptionally good runs were reported. In fact, as much as 1,200 feet of 25-foot pavement was placed in a 10-hour day.

Part of the secret of Abel's paving organization is the excellent care the crews give their machines. The Unibatch paver was purchased new in 1942 and has been used almost continuously since, but care in its operation has minimized repair bills. The Blaw-Knox finisher dates back to 1941, but its engine has required only one set of rings, a re-bore job.

Concrete Superintendent Arnold Larson has followed concrete paving in Iowa, Indiana, and Nebraska for many years. He can trace the evolution of the modern equipment of today back to the time when the pavers had steel wheels, and concrete materials were measured in boxes.

The steel forms are also well taken care of. Larson doesn't permit crews to beat forms with a sledge hammer, nor does he stand for a bad job of tamping. The form pins on the Hastings job were extracted by a Cleveland puller, the forms were loaded on a special truck containing a small hoist, and they were cleaned as they were set.

Minor shouldering work by a Caterpillar No. 12 grader completed the project only 2 weeks after the last pavement was laid August 5, 1949.

Field work came under the general supervision of Resident Engineer Norris Luedtke, representing the city and the architectural firm of Harold Hoskins & Associates, Inc. Arnold Larson ran it for Abel Construction Co.

Unlike their military counterparts back in the days when boasting was commonplace, both Luedtke and Larson looked on the recent accomplishment as something they must do as a matter of course to set the pace for 1949. Despite the speed with which the pavement went down, the fine adjustment of machines resulted in a pavement so smooth that there was no vibration in a batch truck no matter how fast it scooted over the concrete toward the paver.

Resistance of Cements To Corrosive Chemicals

A new chart showing the resistance of both resin and silicate cements to various corrosive chemicals has just been issued by the Special Chemicals Department of The Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

Designed to help in the selection of the proper cement for specific industrial uses, the chart shows the resistance of Pennsalt PRF, Asplit, Causplit, Pennsalt HF, and Penchlor Acid Proof Cement to 259 chemicals and chemical compounds. The chart is based on tests conducted by Pennsalt.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 117.

Ode Now Manages Findlay

Kenneth F. Ode is now Manager of the Findlay Division of Gar Wood Industries, Inc., Findlay, Ohio. He states that a new policy is in effect at the Division to improve field service on Buckeye ditchers and Gar Wood tractor equipment.

Lightweight Mineral Cuts Building Costs

The gold prospectors at the turn of the century made a most significant yet unwitting contribution to the construction field in their discovery of a mineral which they termed "fool's gold". In their search for gold and other precious minerals, they found a huge deposit of vermiculite in Libby, Mont. Attracted by its golden glisten when expanded by heat, and dismayed because it caved in whenever they dug holes in it, the prospectors didn't realize that what they had discovered was slated to become an important construction development of the first half of the century.

Vermiculite made its industrial debut about a quarter of a century ago when the Zonolite Co., 135 S. La Salle St., Chicago 3, Ill., was established to develop the Libby deposit. But the mineral didn't achieve fame until contractors realized the value of its insulating properties for heavy construction jobs. By using vermiculite plaster for fireproofing the steel skeletons that support modern buildings, engineers discovered that they could reduce the weight of buildings appreciably. For example, when the new 35-story Mercantile National Bank Building in Dallas, Texas, was completed, using vermiculite to fireproof the structural-steel members, it was found that its weight had been reduced by 31,268,653 pounds or 30 per cent.

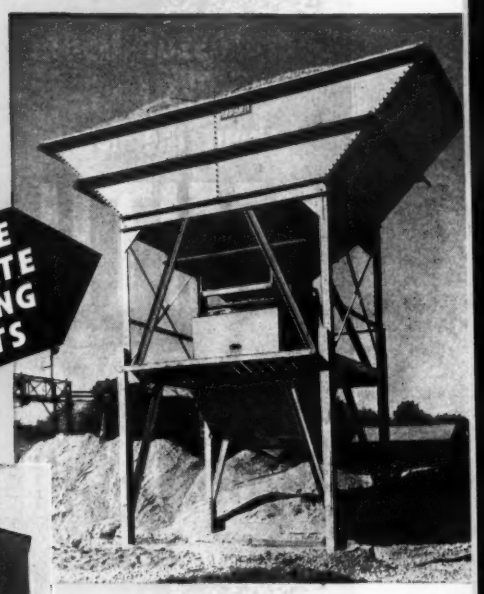
Used in place of sand or gravel in the mixing of plaster and concrete, vermiculite expands up to fifteen times its volume when subjected to high heat during processing. The expansion renders the material lightweight—less than 10 per cent of the weight of sand or gravel—and it will not burn under any circumstances.

Directs Diesel Sales

Sales activities of the Four Cycle Diesel Engine Department of Nordberg Mfg. Co., Milwaukee, are now directed by Joseph G. Broz, Sales Manager. He was formerly associated with Busch-Sulzer Diesel Engine Co., purchased by Nordberg in 1946, and until his recent appointment was surveying the South American market for Nordberg. H. M. Cahill assists him in his present position.

BLAW-KNOX

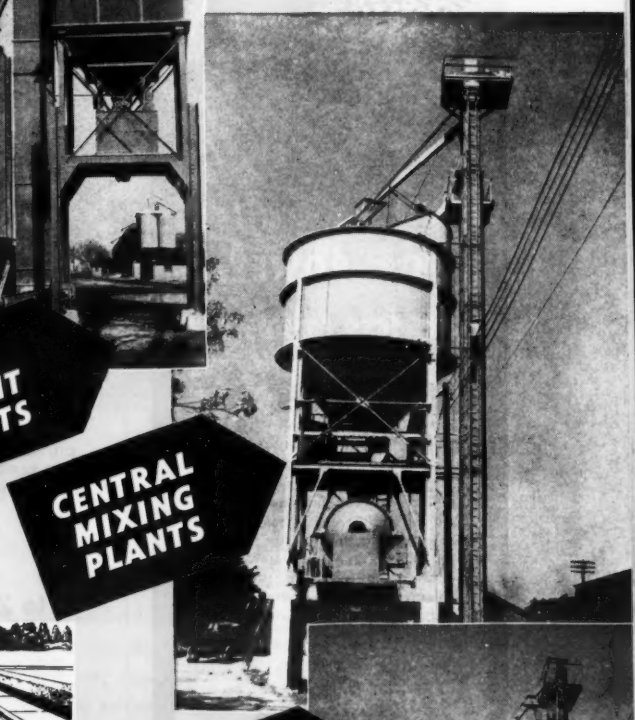
BATCHING PLANTS REALLY CUT CONCRETING COSTS



HERE'S a complete line of portable batching and mixing plants that will keep your fleet of trucks moving all the time. Big capacity for aggregates and cement means there's never any waiting for the crane to catch up or for spotting cement cars for unloading. Twin batchers, and choice of manual or automatic controls for Water Weighing Tanks, electrically operated discharge gates on bulk cement plants are only a few of the features that assure fast, accurate batching.

Capacities of aggregate plants range from 100 to 120 tons in two, three or four-compartment styles, bulk cement plants of 300 and 400 barrel sizes with combination arrangements to double these capacities.

The flexibility and portability of Blaw-Knox batching and mixing plants provide the solution to ready mixed concrete operations, central mixing plants or concrete products manufacturing problems. See your nearest Blaw-Knox distributor for details.

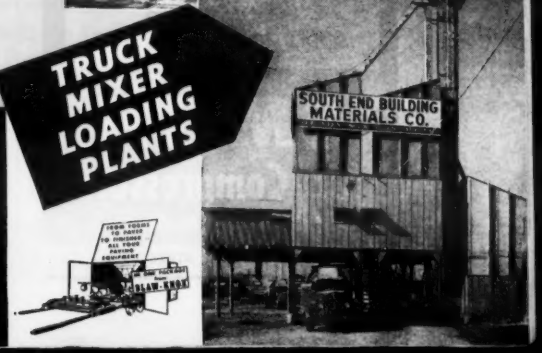


Hi-Boy Trukmixers

Clamshell Buckets

Concrete Buckets

Steel Street Forms



BLAW-KNOX

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New Concrete Pipe In Longer Lengths

Experiments on the new Model TT machine for making concrete pipe in 6-foot lengths have recently been completed by the Concrete Pipe Machinery Co., Sioux City, Iowa. Realizing that machine-made pipe must be stripped immediately to get economical and commercial production, the company decided to experiment with the McCracken machine, using the patented Packer-Roller-Head Process. It was believed that tongue-and-groove reinforced pipe in longer lengths could be made and stripped with this machine because the curing pallet and the steel cage that must be used for this type of pipe would help it to stand when the mold was removed.

The result was that McCracken bell-and-spigot and tongue-and-groove pipe can now be made in longer lengths and with the accuracy needed to use the Tylox rubber gasket joint made by Hamilton-Kent Mfg. Co., Kent, Ohio. It was also demonstrated that the pipe can be made both with or without steel, and that gravel can be used instead of crushed rock, if desired.

McCracken bell-and-spigot and tongue-and-groove pipe can now be made in 6-foot lengths, according to Concrete Pipe Machinery Co.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 81.

DC Arc-Welder Line, Gasoline and Diesel

A new line of lightweight mobile engine-driven dc arc welders, the WD-40 Series, has been announced by General Electric's Welding Division, Schenectady 5, N. Y.

One of the five in the series is a general-purpose heavy-duty welder, the WD-42AGW, driven by a 31-hp Wisconsin VP-4 air-cooled engine with a magneto ignition. The welder weighs 1,050 pounds, and its rated output is 200 amps at 40 volts. A manually operated slow-down control is designed to econmize on fuel by slowing the engine to idling speed when not holding a welding arc. Intended for welding jobs requiring a heavy-duty cycle and a good degree of portability, this unit is also available with a 4-cylinder liquid-cooled Hercules engine drive.

Other welders also in the liquid-cooled gasoline-engine drives are the WD-43AG and WD-44AG, powered by a 6-cylinder 63-hp Chrysler industrial engine. The WD-43AG is rated at 300 amps at 40 volts and weighs 1,725 pounds. It is designed for welding beams and girders, and for general maintenance work. The 400-amp model, the WD-44AG, weighs 1,775 pounds and has a welding range of 80—500 amperes. Both models are equipped with belt-driven governors to prevent overspeeding of the engine and an automatic slow-down device to save gas.

The WD-40 series has four welders in the diesel-drive line. The two 300-amp models, the WD-43ADGM (General Motors diesel engine) and WD-43ADC (Caterpillar), weigh 2,350 pounds and 3,350 pounds and have a welding range of 60-375 amperes. In the 400-amp line, the WD-44ADGM (General Motors) and WD-44ADC (Caterpillar) have a welding range of 80-500 amperes. All diesel engines are equipped with batteries, generators, electric starters, and preheaters to facilitate operation in subnormal temperatures.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 107.

Schmitz With Seattle Steel

Ferdinand Schmitz is now Vice President of the Seattle Steel Co. and the Inland Empire Steel Co. He was formerly Vice President of the Pacific Car & Foundry Co.

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NEW JERSEY CONTRACTOR SAYS—
SONOTUBES REDUCE LABOR COSTS
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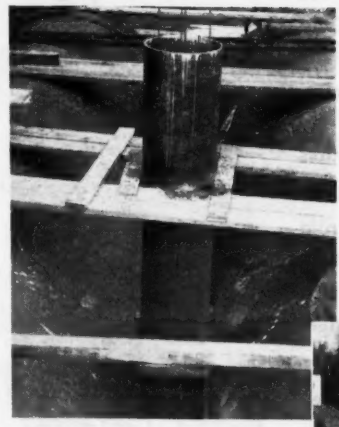
CONCRETE PIERS AND COLUMNS



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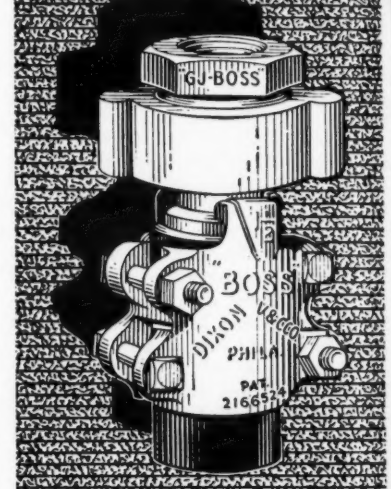

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Avoid Legal Pitfalls

Edited by A. L. H. STREET, Attorney-at-Law

These brief abstracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Roadside Park Generally Deemed Part of Highway

THE PROBLEM: *Is a roadside park, such as is familiar to motorists touring on trunk highways, a legitimate part of the highway?*

THE ANSWER: It seems to have been very generally and reasonably assumed that a wayside or roadside park, where people can pull off the road to rest, lunch, or glimpse scenery, is a proper adjunct of a highway as a means of promoting the safety and convenience of travelers. However, there is but little law specifically covering the subject. A cursory search for legal light on the question yields only a Pennsylvania statute and a Minnesota Supreme Court decision.

The Minnesota court's observation was casually made and is deprived of some force because the case at hand was decided on another point. Still, the decision probably reflects what most courts would decide concerning the power of a state highway department to expend funds raised for "highway purposes" on roadside projects.

The Minnesota constitution specifies that trunk-highway funds shall be devoted solely to highway purposes. This would not include any system of parks or beautification independent of a highway, the court observed: ". . . there would be serious question, not merely of statutory but also of constitutional law, if, independently of a way of travel, there was an attempt to spend from the highway fund for purposes of 'artistic development' such as the establishment and maintenance of a mere park."

But "under modern conditions of traffic", said the court, "there could be, we assume, no reasonable argument that it is not a legitimate highway purpose to so widen a right-of-way at a scenic or other proper point as to enable tourists to pause and park their cars thereon in positions of safety." (State of Minnesota v. Werder, 200 Minn. 148, 156, 273 N. W. 714.)

The declaration is in line with the same court's statement in an earlier case (State v. District Court, 196 Minn. 44, 47, 264 N. W. 227) to this effect: under Minnesota statutes, if the state commissioner of highways sought to acquire lands "not for the use of a trunk highway but for some other purpose, no matter how worthy, the auditor would have no right to issue a warrant on the trunk-highway fund in payment."

The only pertinent statute that has come to our attention was adopted by the Pennsylvania Legislature in 1945 and was amended in 1947 (Purdon's Pennsylvania Statutes, 1949 Supplement Title 36, Secs. 471-477.) Sec. 471 empowers the Highway Department "to construct, erect, and maintain roadside rests adjacent to state highway routes *for the health, safety, welfare, and accommodation of the traveling public.*" (Because limited to "roadside rests *adjacent* to state highway routes", the law seems to imply that the Department needs no special statute to empower it to establish such rests *within the limits* of highway.) The number of rests to be established was limited to 67 and the maximum cost of each fixed at $3,500. Sec. 473 provides for construction either by contract or by employees of the department.

If one be permitted to conjecture what the courts of a particular state would decide, in the absence of a statute specifically covering the point, it seems reasonable to assume that roadside rests along a trunk highway, well spotted to serve the needs, safety, and convenience of travelers, would be deemed a proper charge against a fund devoted to highway purposes.

Frozen Labor Supply Increased Labor Cost

THE PROBLEM: *A Government contractor could not secure labor at the rates allowed by the Federal Wage Adjustment Board, because of an Executive Order "freezing" laborers on the jobs then held. Was the contractor entitled to an allowance for resulting extra cost?*

THE ANSWER: No. (J. B. McCrary Co. v. United States, 84 Fed. Supp. 368, decided by the United States Court of Claims.) The Court of Claims said:

"This freeze order no doubt increased the cost of numerous contractors and no doubt made it impossible for many businesses in the country to secure much needed labor, resulting in losses to them; but the Government is not liable in damages therefor, because it was an order of general application issued by the Government in its sovereign capacity to promote the national defense. If as a result of it some particular person or many persons were damaged, it is something for which no compensation can or should be paid. The individual or individuals must stand such losses in the interest of the common good. They are no more entitled to recover them than is the man who is taken away from his business and drafted for military service."

Dragline Rented, Operator Injured, Who Was Liable?

THE PROBLEM: *Construction Company A agreed to furnish a shipyard company a "fully operated" dragline for use in enlarging a slush pit, etc., at $8 an hour. A, having no dragline immediately available, arranged with Construction Company B to furnish the shipyard company a "fully operated" dragline at $7 an hour. One of the two men sent by B to operate the line was accidentally injured while so employed. Whose insurance company was liable under the Texas Workmen's Compensation Act—A's, B's, or the shipyard company's?*

(Concluded on next page)

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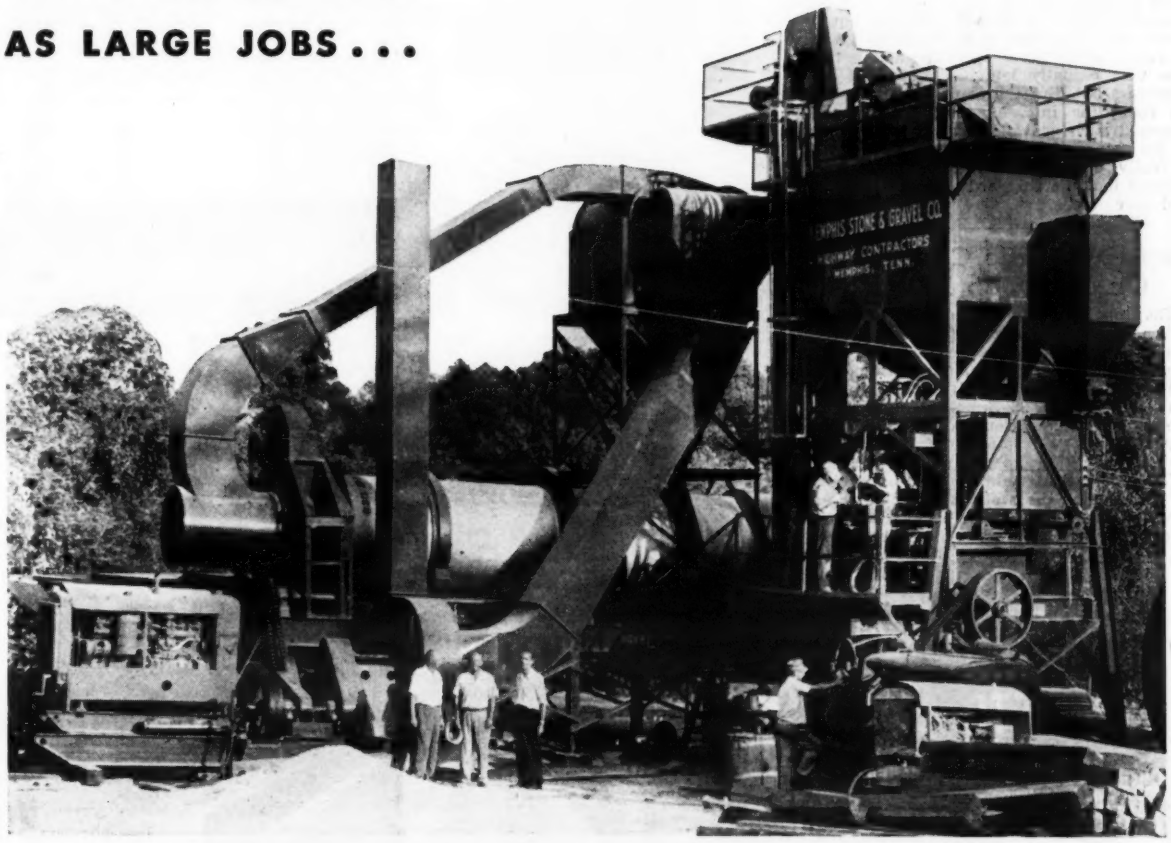

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Avoid Legal Pitfalls

(*Continued from preceding page*)

THE ANSWER: B's, since the shipyard company reserved no right to control the details as to how the work was to be accomplished. (Insurors Indemnity & Insurance Co. v. Pridgen, 223 S. W. 2d 217, decided by the Texas Supreme Court.)

The decision was based upon proof of a custom in the construction industry, well known by all parties concerned, that the owner of the dragline would carry the operators on his payroll; pay their wages and Social Security, withholding taxes, and compensation insurance; have the right to discharge or replace the men and to check on the operations to determine whether the equipment was being properly used, etc.

The shipyard company was immune from liability because it had exercised no such control over the details of operation of the dragline as would have made it, for the time being, employer of the men operating it. The court noted that "there is a vast difference between the right to point out the location and dimensions of a pit to be dug or indicate a pile of concrete slabs to be loaded into a truck, and, on the other hand, the right to direct the details of how such work is to be accomplished." The court distinguished the case from one in which it had earlier decided that the lessees of a bulldozer must be regarded as employers, for the time being, of a man furnished by the lessor to operate the bulldozer. In that case the evidence showed that lessees exclusively controlled operation of the equipment while it was in their possession. (Hilgenberg v. Elam, 145 Tex. 437, 198 S. W. 2d 94.)

The court referred to a statement made by high legal authority (Restatement of the Law, Agency, sec. 327) to the effect that one engaged in the business of renting equipment with operators is more apt to intend to retain control over operation details than one who casually lets his equipment and operators out. But the court said there was no room for inferring that the shipyard assumed such control, because the contract of the owner of the dragline was to furnish a "fully operated" one and the evidence showed that the shipyard exercised no control over details.

Extra-Materials Claim On Lock Job Is Rejected

THE PROBLEM: *Under circumstances detailed below, was a river-lock contractor entitled to pay for materials used in a construction method not called for by the contract?*

THE ANSWER: No. (Joseph Meltzer, Inc., v. United States, 77 Fed. Supp. 1018, decided by the United States Court of Claims.) The court said:

"The plaintiff complains that it has been refused payment for timber used as headers to tie together the sections of cribbing for the upper and lower guide walls which sections were built separately, and later moved into position and tied together with the headers here in question. The contract drawings showed the two cribbings in place, as continuous structures, and they could, in fact, have been built that way, in which case the headers in question would not have been necessary. The plaintiff built the cribbing in sections for its own convenience and economy, and we think that it is not entitled to be paid for the extra materials made necessary and used because of its choice of that method of construction."

Validity of Contract To Purchase Material

THE PROBLEM: *Was a contract so worded as to obligate a contracting company to buy from defendant all the ready-mixed concrete needed by the company in a certain county within a specified period—less than six months—and was the contract binding?*

THE ANSWER: Yes. (Master Contracting Corp. v. M. F. Hickey Co., 87 N. Y. Supp, 2d 870, decided by the New York Supreme Court, Queens County.) Although the contract did not explicitly show that the contracting company agreed to buy all of its requirements, the court said that that was necessarily implied from the wording of the agreement, and that therefore the contract was not void as failing to indicate the quantity of concrete bargained for.

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Head-on view of project. Fine graders lead the parade as paving swings into high gear in background. Temporary dirt road is shown at right.

Bethlehem Structural Steel shown in place in new overpass. The structure has one 61-ft, two 42-ft spans. Note railroad tracks beneath steel beams.

Bethlehem H-Piles provide firm footing for overpass. To reach bed-rock, the piles were driven 110 ft. Bethlehem H-Piles have long service life.

New Overpass in Western Pennsylvania

From left to right: J. R. Snyder, contractor; John Legnosky, Pa. Dept. of Highways; B. H. Craig, superintendent; V. C. Minteer, bridge foreman.

To eliminate a hazardous grade crossing on the heavily-traveled Linesville-Meadville highway in the western part of the state, the Pennsylvania Department of Highways recently called for a new overpass near Harmonsburg. Construction of this overpass and its two-lane approaches is shown in the accompanying pictures. Contractor: New Castle Duntile Co., New Castle, Pa. Steel items furnished by Bethlehem were bridge reinforcing, structural steel, bar mats, dowel units and guard rail.

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New Span Will Ease One Traffic Bottleneck

Relocated Bridge and Road Will By-Pass the Congested Parts of Mill Cities on Opposite Banks of River

By WILLIAM H. QUIRK,
Eastern Editor

✦ ONE of the worst bottlenecks to traffic in Connecticut will be eliminated by the new Shelton-Derby Expressway which crosses the Housatonic River, well removed from the congested downtown business sections of the two busy mill cities. Traffic has been continually snarled in the narrow, crooked streets of Shelton on the west, and Derby on the east bank of the Housatonic because of the old 2-lane low-level truss bridge connecting the two cities at the worst possible point. The Connecticut State Highway Department is now remedying that bad condition by constructing a new bridge across the river about ½ mile downstream from the old structure. The bridge and approaches will be part of a dual-lane expressway that will by-pass the older, densely settled city areas, but that will also provide easy access to those sections.

The initial step in this needed improvement got under way in November 1948 after the State Highway Department awarded a contract for the construction of the Housatonic River substructure to the Mariani Construction Co. of New Haven, Conn., on its low bid of $754,204. By November 1949, work on the 11 piers and 2 abutments, all of reinforced concrete, had progressed sufficiently to permit a start on the erection of the steel superstructure. A contract for furnishing and erecting the structural steel had been awarded to the American Bridge Co., Inc., of New York City on its low bid of $1,728,354. The substructure contract was scheduled for completion in January 1950, and the steel work is to be finished soon.

Future contracts on the project include one for the construction of a 7-inch reinforced-concrete deck slab over the entire length of the bridge; also the approaches, connecting ramps, and structures at both bridgeheads. Until this other work is completed, the new bridge will not be open to traffic. The old steel arch connecting downtown Shelton and Derby will not be removed.

New Bridge

The new bridge is 1,578 feet long, with the 11 piers numbered from west to east across the river. From the west abutment to pier 7 inclusive, the structures are founded on firmly compacted gravel, while the remaining 4 piers and the east abutment have a steel pile foundation. The span lengths are:

West abutment to pier 1	77 ft.
Pier 1 to pier 2	78
Pier 2 to pier 3	78
Pier 3 to pier 4	78
Pier 4 to pier 5	100
Pier 5 to pier 6	100
Pier 6 to pier 7	100
Pier 7 to pier 8	100
Pier 8 to pier 9	250
Pier 9 to pier 10	250
Pier 10 to pier 11	250
Pier 11 to east abutment	100
Total	1,561 ft.

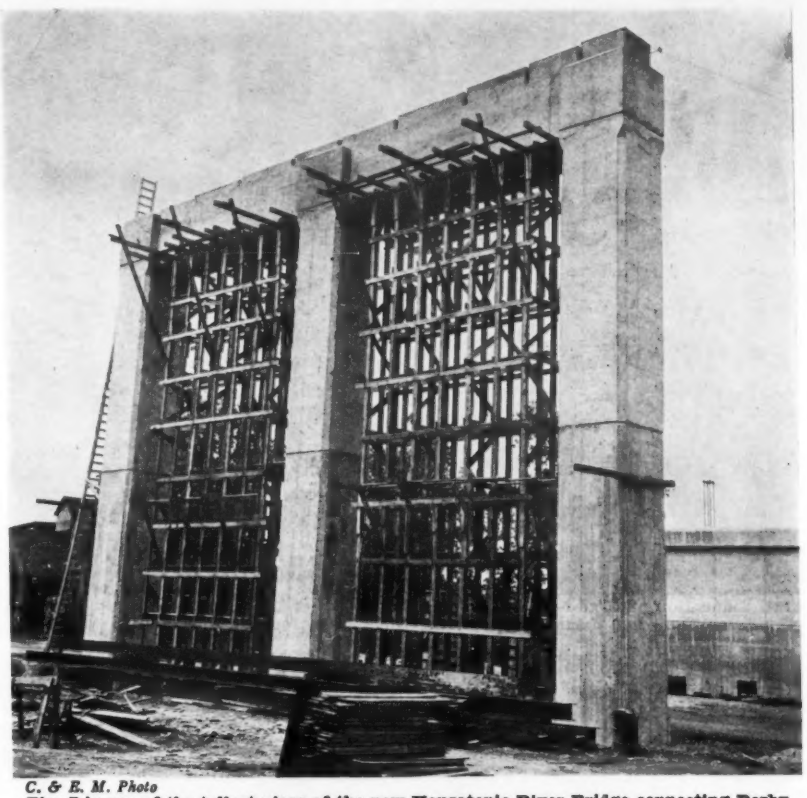
The three 250-foot spans are riveted trusses, while the others are composite girder-beam construction with spiral steel welded to the top flanges of the nine girders making up a typical cross section. The trusses are 25 feet high on 40-foot centers, with cantilever brackets out from the sides. Design loading is H20-S16-44, and the superstructure will carry two 26-foot roadways separated by a 4-foot median, with a 3½-foot sidewalk on the south side. The assumed design speed is 40 mph.

From the west abutment out to pier 9, the bridge is on a slight curve with the piers laid out on radial lines. Piers 9 and 10 are in the river and are protected with stone masonry to a point 12½ feet above the water line; the rest of the piers are on land. The main channel of the river, 100 feet wide, lies between piers 8 and 9. The river piers 9 and 10, pier 11, as well as pier 8, which is close to the bank, were built within steel sheet pile cofferdams and required a tremie concrete seal.

Winter Work

The contractor started work on the west half of the job first, and took advantage of the mild 1948-1949 winter to continue operations through the ordinarily closed season. Footings were poured first for the structures requiring no pile foundation, beginning with pier 7 and continuing through piers 6, 5, 4, 1, 2, west abutment, and pier 3 in that order. Then the pier stems or columns were undertaken next.

The west abutment, high on a hill on the Shelton side, is a simple structure. Piers 1, 2, and 3 are fairly similar, each with two footings averaging 10 to 12 feet square x 5 feet deep, out of which rise 5 x 5-foot columns connected at the top with a 4 x 6-foot tie beam. At No. 4 the piers widen out to accommodate the approach ramps to the bridge. The rest of the piers have continuous footings, and piers 4, 5, 6, and 7 have 4, 5, 4, and 3 columns respectively; the remaining 8, 9, 10, and 11 are solid construction.



C. & E. M. Photo
Pier 7 is one of the tallest piers of the new Housatonic River Bridge connecting Derby and Shelton, Conn. Its three columns are shown here with the timber cribbing support for the tie beam still in place.

Piers 6 and 7 are the tallest, being 51 feet high measured from the bottom of the concrete. Lengths of footings vary, with pier 5 being the longest at 119 feet to support its 5 columns. This particular footing is 6½ feet deep x 12 feet wide; the 5 columns are 6 feet square and are connected at the top with a 4 x 6-foot tie beam. Detail dimensions of the other piers in this group vary slightly.

(*Continued on next page*)

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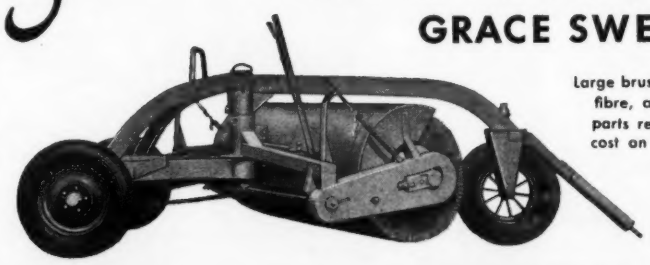

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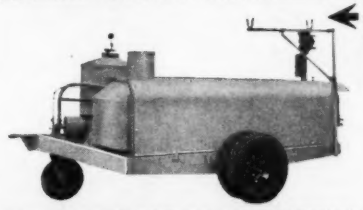

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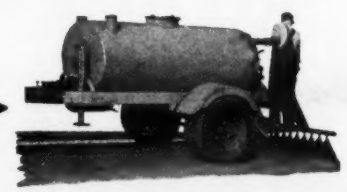

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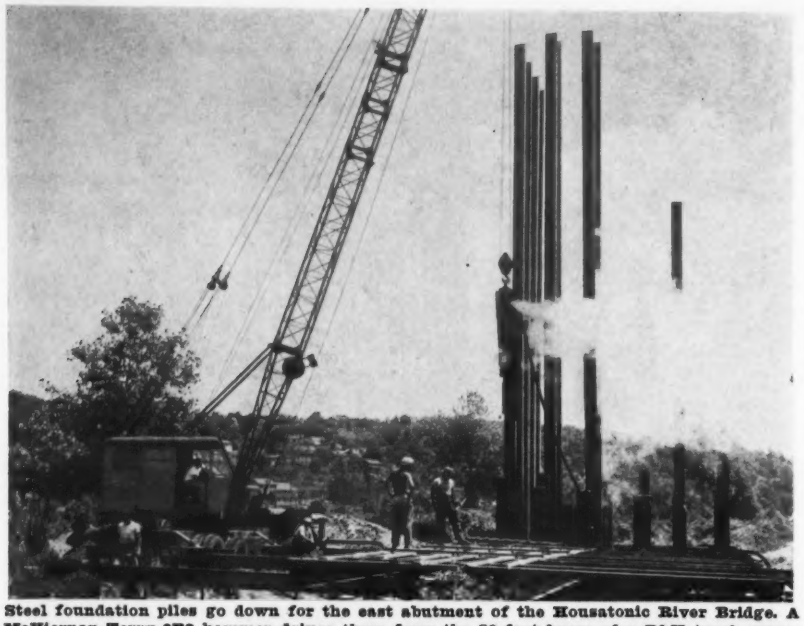


Steel foundation piles go down for the east abutment of the Housatonic River Bridge. A McKiernan-Terry 9B3 hammer drives them from the 80-foot boom of a P&H truck crane.

New Span Will Ease One Traffic Bottleneck

(Continued from preceding page)

Batch Plant

A concrete batch plant was set up on the west, or Shelton, side of the bridge site. It consisted of a Blaw-Knox 3-compartment aggregate bin and a Blaw-Knox 400-barrel cement storage bin. Traprock crushed stone in two sizes, 1¼ and ½-inch, for coarse aggregate was supplied by the New Haven Trap Rock Co. of North Branford, Conn., and delivered to the job by truck. The large and small sizes of stone were proportioned in the mix at 65 and 35 per cent respectively. Sand, also furnished by truck, came from the Carten Sand & Gravel Co. of Devon, Conn. From the stockpiles the aggregate bin was charged by a Lorain 77 crane with a 75-foot boom and a 1-yard clamshell bucket.

Natural and portland cement were used in the mix. The natural cement came from the Century Cement Mfg. Co., Rosendale, N. Y., and was delivered in bags. The portland cement came in bulk from the Alpha Portland Cement Co. at Cementon, N. Y. Water for the mix came from the Shelton city supply. The Bethlehem Steel Co. of Bethlehem, Pa., furnished both the reinforcing steel and the H-beam foundation piles. Rail deliveries were made to a siding of the New Haven Railroad.

The dry weights of a typical 7-bag batch yielding 29 cubic feet of concrete were as follows:

Natural cement	80 lbs.
Portland cement	564 lbs.
Sand	1,423 lbs.
Stone	2,192 lbs.
Water	36 gals.

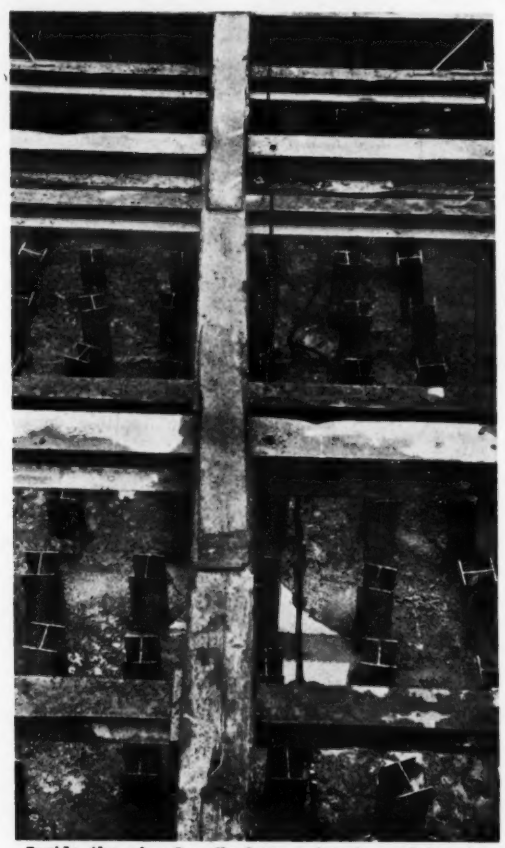
Mixing and Placing Concrete

From 5 to 6 Mack trucks holding either 3 or 4 batches delivered the cement and aggregate to a Ransome 27-E paver which was moved to whichever structure was being built. The

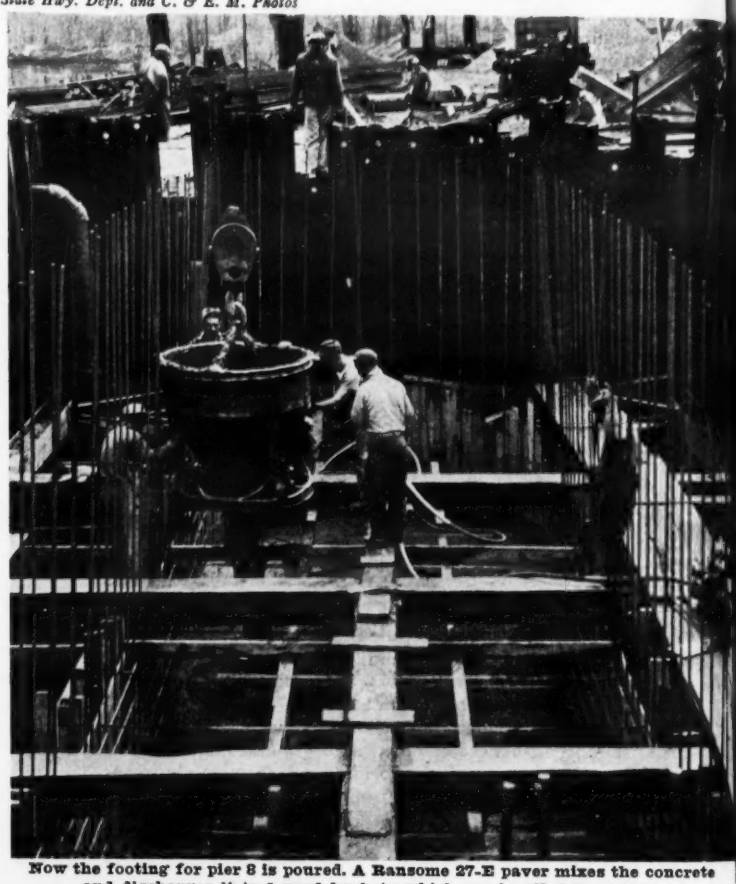
(Continued on next page)

Connecticut State Hwy. Dept. and C. & E. M. Photos

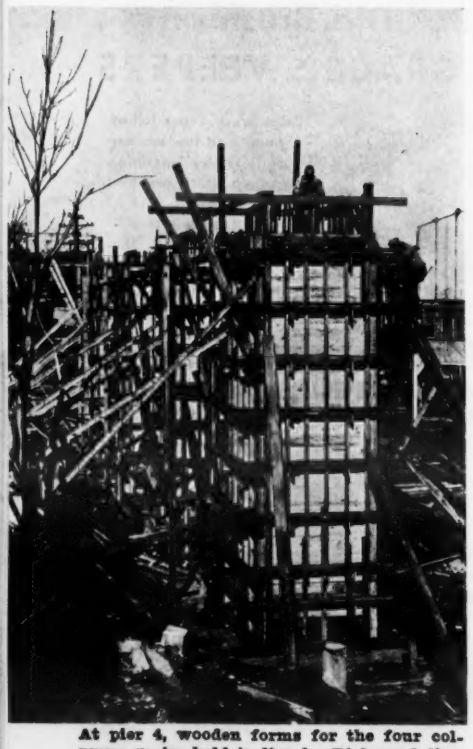
A McKiernan-Terry No. 7 hammer drives sheet piling for the cofferdam at pier 8.



Inside the pier 8 cofferdam, a tremie seal has been poured, the piles cut off, and laitance removed.

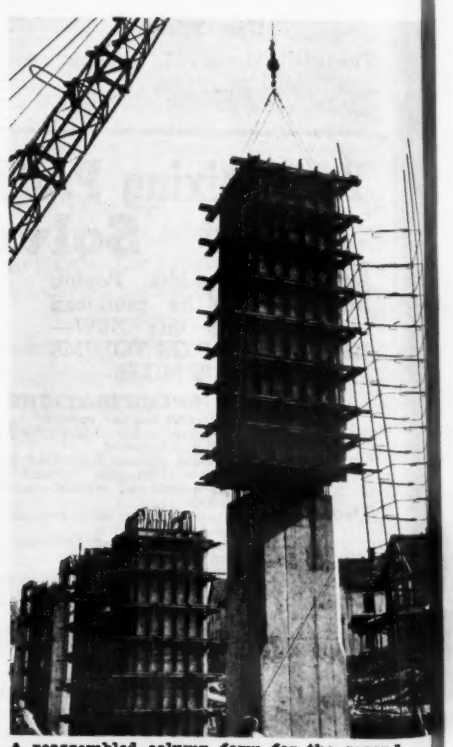


Now the footing for pier 8 is poured. A Ransome 27-E paver mixes the concrete and discharges it to 1-yard buckets which are handled by cranes.



At pier 4, wooden forms for the four columns go in, held in line by Richmond ties.

An overall view of the columns at pier 4 prior to removing panels and completing the stripping. This is a first-lift pour; the second-lift pour begins in the next photo.



A reassembled column form for the second-lift pour is raised into position at pier 4.

C. & E. M. Photo
A Lorain crawler crane with an 80-foot boom and a Blaw-Knox 1½-yard clamshell bucket excavates at pier 9, a river pier.

C. & E. M. Photo
A Rex 6-inch pump unwaters pier 9. Across the river are the completed piers 8, 7, 6, etc. Piers 7 and 6 are the tallest.

ingredients were mixed for 75 seconds in the paver, from which the boom had been removed, and then discharged into 1-yard concrete buckets which were lifted to the forms by cranes. Besides the crane at the batch plant, three others were also on the job—a Lorain 1½-yard crawler with an 80-foot boom and a 20-foot jib; a Lorain ¾-yard truck crane with a 50-foot boom; and a P & H truck crane with an 80-foot boom. These cranes were used in concreting, excavating, pile driving, material handling, etc.

Wooden forms were used, built of ⅝-inch plywood and backed with 2 x 6 vertical studs on 12-inch centers, and double 2 x 6 wales on 3-foot average centers. Richmond ¾-inch ties held the forms in line. Concrete placing averaged 30 to 35 yards an hour with hoppers and elephant-trunk pipe so that the drop of free concrete was never more than 5 feet. Mall vibrators were employed during the placing. Curing was effected with burlap and water, kept on for 72 hours.

The taller columns in the piers were poured in two lifts, and the tie-beam sections were usually built separately. Forms supporting the tie beams were left in place for 21 days. The timber cribbing under the tie beams was constructed of 4 x 6's, made up in 6-foot-high panels, and also supported scaffolds

(*Continued on next page*)

Electroline
WIRE ROPE FITTINGS

The LAST WORD in
SAFETY
SPEED
SAVINGS

No heat, acids or complicated equipment required for installation. Ordinary mechanic's tools do the job, safely, even in chemical plants, powder plants and mines, where other methods would be prohibited. And they are safe to use, because they have the highest holding strength of any known wire rope or strand connectors. They assure *savings in installation* because unskilled labor can do the job easily and quickly; *savings in use* because they prolong wire rope life by damping vibration and overcoming rope fatigue at entrance to fitting . . . and because they are reclaimable.

Note ease of installation

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Simply slip the sleeve over the cable, spread the strands, insert and drive in the plug then apply the socket. See what a solid and permanent joint you have by looking at it through the inspection hole put there for the purpose.

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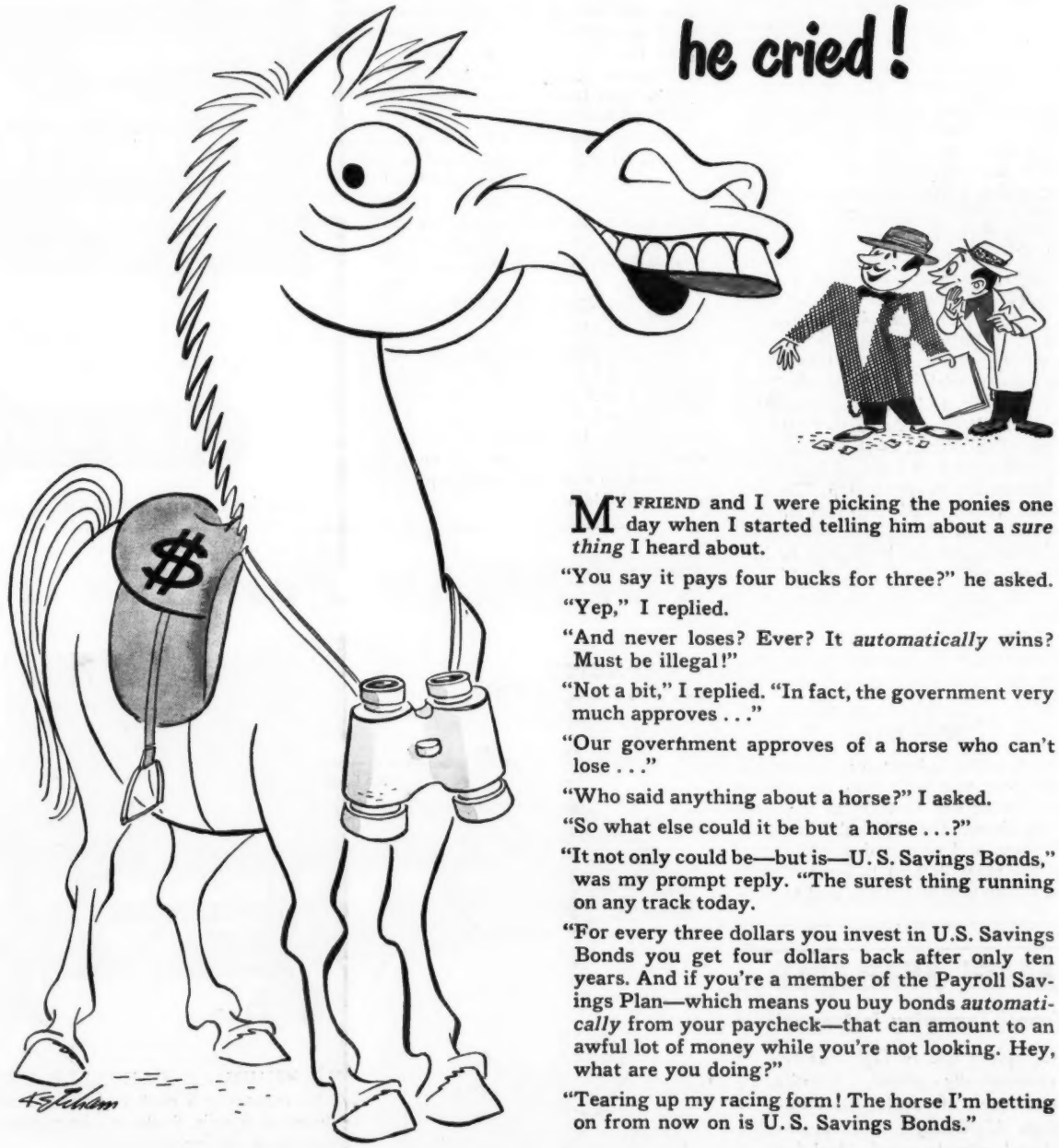
"There's no such animal," he cried!



MY FRIEND and I were picking the ponies one day when I started telling him about a *sure thing* I heard about.

"You say it pays four bucks for three?" he asked.

"Yep," I replied.

"And never loses? Ever? It *automatically* wins? Must be illegal!"

"Not a bit," I replied. "In fact, the government very much approves . . ."

"Our government approves of a horse who can't lose . . ."

"Who said anything about a horse?" I asked.

"So what else could it be but a horse . . .?"

"It not only could be—but is—U. S. Savings Bonds," was my prompt reply. "The surest thing running on any track today.

"For every three dollars you invest in U.S. Savings Bonds you get four dollars back after only ten years. And if you're a member of the Payroll Savings Plan—which means you buy bonds *automatically* from your paycheck—that can amount to an awful lot of money while you're not looking. Hey, what are you doing?"

"Tearing up my racing form! The horse I'm betting on from now on is U. S. Savings Bonds."

Automatic saving is sure saving—U.S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

New Span Will Ease One Traffic Bottleneck

(*Continued from preceding page*)

from which the concrete was rubbed. This temporary grillage was easily dismantled by a crane, and the lumber was salvaged for use at some other location.

During the cold weather, water for the concrete was heated, and steam was injected into the mixing drum of the paver to keep the temperature of the concrete between 60 and 70 degrees F in the concrete bucket. The forms were covered with tarpaulins, and the concrete was heated by steam for 72 hours. With such precautions the concreting cycle was maintained throughout the winter months with little lost time due to bad weather.

Pile Driving

Steel piles were driven under piers 8, 9, 10, 11, and the east abutment. They are 12-inch H-beam 53-pound sections, and were driven to refusal in rock—refusal considered as 10 blows to the inch. The average pile load is 42 tons, while pile lengths range from 40 to 65 feet. They were driven from the crane rigs with McKiernan-Terry hammers, either a 9B3 or a 10B3, steam being supplied by a horizontal 45-hp boiler and a vertical 25-hp boiler. Pier 8 took 102 piles; pier 9, 126; pier 10, 102; pier 11, 64; and the east abutment required 160 piles. The usual design called for two rows of batter piles at the up and downstream ends, and one row of batter piles along each side. The batter on these piles is 1 in 6. The interior piles of the structures are vertical.

The procedure called for excavation at the pier by crane and clamshell bucket; followed by the driving of the piles; placing of the tremie-seal concrete; cutting off of the piles; and construction of the footings and piers. The steel piles were usually embedded 7 feet into concrete, and their average spacing is 3½ feet on centers both ways.

Cofferdams for piers 8, 9, 10, and 11 were constructed with Bethlehem DP2 40-pound sections, 40 feet long. They were driven with a McKiernan-Terry No. 7 hammer, and afterwards removed with a McKiernan-Terry E-4 pile extractor. The bottom of the steel sheeting was driven to a point 12 feet below the bottom of the excavation. The cofferdams were braced with two rings or rangers placed 12 feet apart vertically. The lower frame was built with 12-inch H-beams, and the top with 14-inch H-beams. Both were cross-braced with 12-inch H-beams on 12-foot centers across the cofferdams. This construction resulted in tight dams which were unwatered with a couple of Rex 6-inch pumps.

Work Dike

Pier 9, which is located in the middle of the river, was built from an earthen dike running out to the site from the eastern shore. On this side the river is shallow, and cranes dug out gravel from the river bottom to form a work berm at the pier site itself, and to connect the pier and shore with a dirt embankment.

C. & E. M. Photo
Meet Julius Garbus (left), who was Inspector on the Housatonic River Bridge job in Connecticut; Frank Dini, Superintendent for Mariani Construction Co.; and E. E. Buck, Assistant Project Engineer.

In making the tremie pours, the portland cement was increased by 10 per cent in each batch while the aggregates were held the same. Thus the cement content for the underwater pours totaled 620 pounds of portland and 80 pounds of natural cement. After a tremie pour was made, it was left undisturbed for 72 hours before the cofferdam was unwatered. Then the piles were cut off, and the laitance removed from the surface of the concrete in preparation for the building of the pier forms. The tremie nonreinforced concrete is 4 feet in depth.

Footings for the river piers averaged around 60 x 20 feet and 6½ feet deep. The pier proper steps in 3 feet from the footing, and then rises on a batter of 9/16 inch to the foot to a 3-foot coping at the top. Pier 8 at 54 feet 6 inches is the tallest of the river piers.

Open Abutment

The east abutment is a large structure with a footing 29 feet wide, 70 feet long, and 6 feet deep. Its 160 steel piles project 4 feet into the concrete footing. Above the footing the abutment is 25 feet wide at the bottom, 4 feet wide at the top, and 28 feet high. It is open construction so that the backfill may take a natural slope.

No tremie concrete was used, but as the site was very wet, a Moretrench wellpoint system was installed around the site with 14-foot risers on 5-foot centers connected to a 6-inch header pipe. Timber sheeting was also driven around the hole. A 6-inch pump dewatered the area down to a level a foot below the bottom of the concrete footing. A steel grid was laid out as a template for driving the piles for the foundation. With this method the abutment was constructed without the need of a cofferdam.

During the work on the east side of the river, the batch trucks hauled from the plant on the west side over the old bridge to where the work was in progress. By June of 1949 all the concrete was completed on the west end of the project.

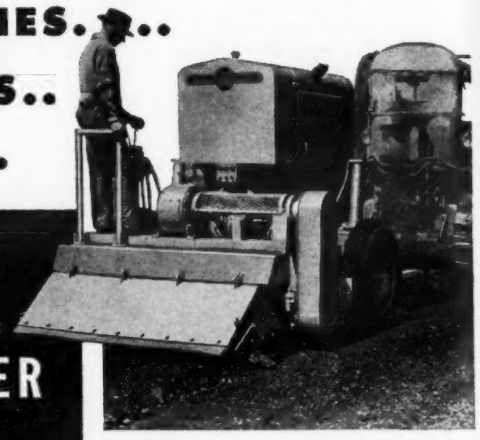
Quantities and Personnel

The major items in the substructure contract are given in the following tabulation:

(*Concluded on next page, Col. 2*)

SCARIFIES... PULVERIZES.. MIXES...

WOOD *Heavy Duty* **PREPARIZER P-600**



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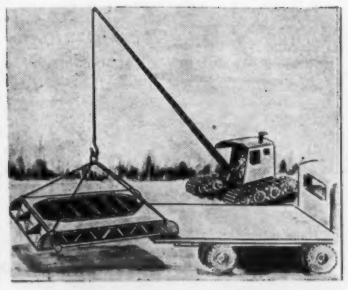
18, 20, 25 & 30 TON

● **PLATFORM LENGTHS**
18, 22 & 30 FEET



THE THURMAN PORTABLE TRUCK SCALE can be moved from job to job by removing 6 nuts which hold side arms in place. The rest of the scale can be lifted as a unit. Scale can be moved and readied for use in a few minutes as no adjustments are necessary.

EXTRA LARGE STEEL BASES support the scale, thus requiring no concrete footings. Scale furnished with Chrome-plated weighbeam—other vital parts are electro-plated to prevent rust and corrosion. Immediate Shipment.

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156 NORTH FIFTH STREET COLUMBUS 15, OHIO

Excavation, dry	5,600 cu. yds.
Excavation, wet (cofferdams)	5,500 cu. yds.
Steel foundation piles	33,200 lin. ft.
Concrete, class A	9,900 cu. yds.
Portland cement	14,400 bbls.
Natural cement	2,600 bbls.
Tremie concrete	700 cu. yds.
Reinforcing steel	800,000 lbs.

The structural steel in the superstructure totals 8,100,000 pounds, of which 5,100,000 pounds is in the truss spans and the remaining 3,000,000 pounds in the girder spans.

The Mariani Construction Co. of New Haven employed a force averaging from 40 to 45 men on the substructure for the Housatonic River bridge under the direction of Frank Dini, Superintendent on the job.

For the Connecticut State Highway Department, Leo J. Conaty is Project Engineer, assisted by E. E. Buck. The Department is headed by G. Albert Hill, Commissioner, with Roy E. Jorgensen, Deputy Commissioner and Chief Engineer.

Bulletin on Compaction

The effect of moisture content upon density in compaction of soils has been widely recognized and studied in detail. But the influence of characteristics of compacting equipment and certain properties of the soil being compacted have not received adequate investigation. The first paper in a new bulletin on soil compaction published by the Highway Research Board studies the effect of equipment on compaction.

The performance of a sheepsfoot roller is shown to depend on its weight, diameter of drum, length of foot shank, area of foot, foot spacing, and shape of foot. For rubber-tire rollers the available data indicate that the contact pressure between the tire and the soil is of more importance than the wheel load and contact area. W. J. Turnbull, S. J. Johnson, and A. A. Maxwell of the Corps of Engineers at Vicksburg, Miss., are the authors of this paper.

The second paper outlines a program of tests which formed the basis for final design of the sub-base and pavement of the Baltimore Friendship International Airport. H. B. McDonald of Koppers Co., and N. L. Smith, Jr., and B. E. Beavin, Sr., both of Whitman, Requardt-Greiner Co. & Associates, are the authors of this paper.

Bulletin No. 23 on soil compaction may be obtained from the Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C., at a cost of 15 cents.

New Machine Tests Asphalt Ductility

A new asphalt ductility tester is offered by the Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill. Precision's Vari-Temp Ductility Apparatus was developed for testing bituminous paving and roofing materials in accordance with ASTM D-113. The machine features ease of operation, since it has one temperature control knob, one lever for full-speed selection, and one lever for starting and stopping the carriage.

The machine incorporates automatic control of bath temperatures from 32 to 100 degrees F, and holds a set temperature plus or minus within 0.5 degree F. Cooling coils and two heating elements, totaling 600 watts, are located in the outer shell of a double-walled bath where agitation from the circulation pump cannot disturb bath water around samples.

There are three pulling speeds, ¼, 1, and 5 centimeters per minute. Three samples can be tested simultaneously, and a large storage compartment has space for conditioning 8 samples. The samples are pulled over a full-length milk glass panel with no carriage sway or chatter. The carriage is automatically stopped by a micro switch at the end of 150 centimeters of travel.

The drive motor and motors for refrigeration and circulation are resilient-mounted; the rigid frame is made of steel angles and channels; and insulation of Zerolite and glass wool surrounds the bath tank. The cabinet, 36 inches high, 110 inches long, and 27 inches wide, has rounded corners and panels of sheet steel finished in green Hammerloid enamel. Plate-glass covers set in chromium-plated frames give undistorted view while testing and keep the bath clean when the machine is not in use.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 23.

Data on Clutch Coupling

The Rawson clutch coupling with taper bushings is featured in Bulletin No. T-649 now offered by Centric Clutch Co., 22-26 South Ave., W., Cranford, N. J. It describes the company's new completely packaged unit, a coupling suitable for various shaft sizes and adjustable for various horsepower needs. It accommodates any shaft with standard keys in sizes from ¾ to 1¾-inch diameter. The split taper bushing wedges the tapered coupling hub tightly to the shaft and key. The manufacturer claims that this assures a perfect fit to the shaft. In addition to depicting the disassembled clutch, both motor half and driven half, the bulletin also gives tables of dimensions, ratings, and the method of selection for peak load.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 11.

Concrete Saw Company Has New Officers, New Address

Hurst Lewis and E. S. Lewis have resigned as directors and officers of Concrete Sawing Equipment, Inc., manufacturer of Concut, Jr., and Clean-Cut concrete cutting machines. Harold F. Pettee, Jr., has been elected President of the company, John I. Bolen, Vice President, and Raymond P. Massey, Secretary-Treasurer.

The company has moved its offices from 265 N. Vinedo St. to 200 Union National Bank Bldg., Pasadena 1, Calif.

Four Diesel Engines

A 14-page catalog fully describing four heavy-duty diesel engines is offered by The Buda Co., Harvey, Ill. The two 6-cylinder models have horsepower ratings of 180 and 225. The two 8-cylinder models have ratings of 240 and 300 hp. All models have a 5¼-inch bore and 6½-inch stroke.

Cross-sectional diagrams and photographs of component parts illustrate design and construction features of the Buda diesel. The folder explains the engineering aspects of the Buda's slow-pressure controlled-turbulence combustion system. A full set of on-the-job photographs show Buda engine applications.

This literature may be obtained from the company, or use the Request Card at page 16. Circle No. 50.

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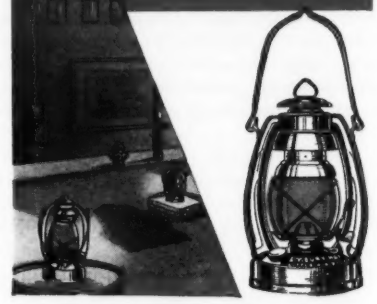

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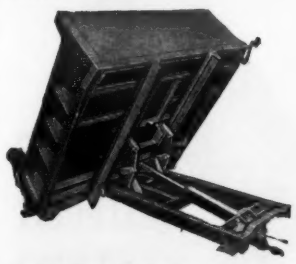

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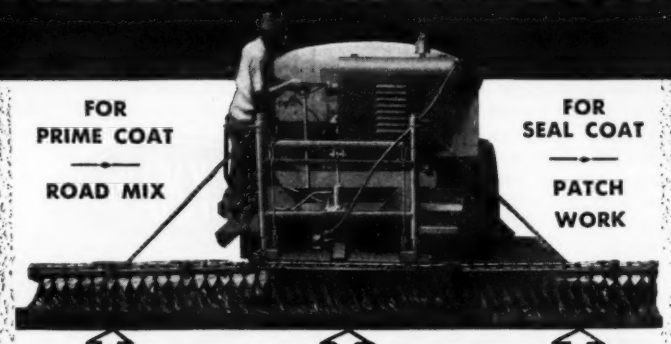

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Convertible Shovel; Fifteen Basic Models

A new convertible excavator and crane in the ¾-yard class, the Lorain TL-25, is now available from the Thew Shovel Co., Lorain, Ohio. Each major component of the TL-25 is an integral unit complete with all subassemblies and parts installed. Components are placed on the turntable as complete assemblies; they may be removed as such and replaced with new complete assemblies, either temporarily to keep the machine going or as replacements.

Other features are: an electric starter and operating lights; five identical clutches to control all operations; a one-piece all-welded turntable bed; hook rollers mounted on drop-forged brackets with centralized pressure lubrication; machine-cut internal ring gear; oil-enclosed machine-cut gears throughout except for two intermittently used gears; anti-friction bearings on all horizontal power shafting and clutch friction drums; and power load lowering.

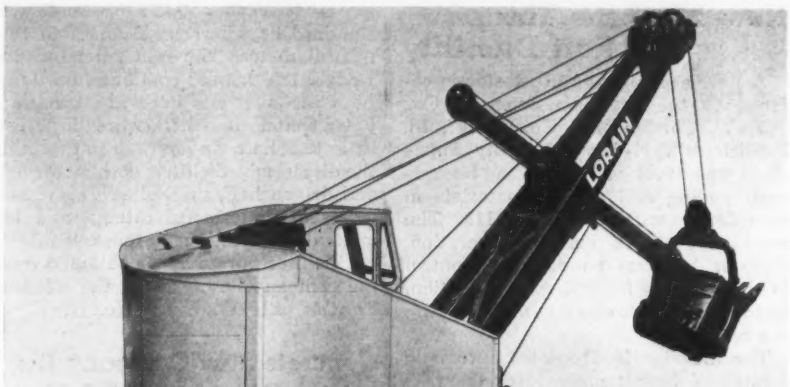
Interchangeable front-end boom equipment includes an all-welded shovel boom with independent cable crowd, a one-piece dipper stick, and a ¾-yard streamlined dipper; a crane boom in two sections with flanged bolted connections and suitable center sections, and tip extensions for lengthening the boom. Special features for standard lifting cranes include a steel erector's device for variable-speed power-controlled boom lowering, a swing brake, and boom stops. A third drum attachment for lifting cranes is available as an extra. The clamshell is equipped with a Rud-o-Matic tagline. The dragline features a Cable-Miser fairlead. The backhoe has a gooseneck boom and a streamlined "non-heeling" dipper.

Mountings for the Lorain TL-25 include three crawlers, all two-speed and chain-driven with oil-enclosed propelling mechanism, and equipped with ratchet and pawl four-way tread and travel lock. All crawlers have 22-inch-wide drop-forged treads. A two-speed transmission is mounted integrally with the turntable engine. In addition to the standard two-speed crawler, an extra-long wide-gage crawler for dragline, clamshell and crane work is designed to increase ground bearing area approximately 25 per cent and to eliminate "nosing-in" while digging. It has an overall width of 11 feet 8 inches and a clear span between treads of 8 feet. It is suited, Thew says, to cross-country pipe-line work where it is desirable for the machine to straddle the ditches.

Twelve rubber-tire carriers are provided for the turntable in a wide series of types and models. Two-engine Moto-Cranes, with approximately 33-mph travel speed, are available in 4 x 4, 6 x 4, and 6 x 6 models, with the 4 x 4 and 6 x 6 providing front-wheel drive. Single-engine self-propelled carriers, with approximately 7-mph travel speed, are available in 4 x 2, 4 x 4, and 6 x 4 models. The 4 x 4 model provides front-wheel drive.

The 6 x 4 carriers of the Moto-Crane and self-propelled machines are available in standard track (96-inch overall width) and wide track (106¼-inch overall width). The wide-track carrier has lifting capacities when working on rubber (without outriggers) that approximate those of the standard-track machine when blocked on outriggers. Wide-track carriers are designed for jobs requiring maximum lifting capacities when working on rubber.

All four Moto-Crane carriers may be converted into dual-control machines which are combinations of Moto-Crane and self-propelled. These machines make it possible to use the Moto-Crane automotive type of drive and steering to travel at speeds up to 33 mph between jobs. Once on the job, a 5-minute changeover permits operating the machine as a self-propelled unit with all operating, travel, air-braking, and air-steering controls located at the operator's position in the turntable cab.



The new ¾-yard Lorain TL-25 has three crawler mountings and twelve rubber-tire mountings. Major components are installed as complete assemblies on the turntable.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 144.

Flexible-Head Wrench

Three new Flex-Head wrenches have been announced by the Snap-on Tools Corp., Kenosha, Wis. The construction of these wrenches provides the safety and power of the socket wrench plus greater clearance advantages when working under obstructions, according to the company.

The double-hexagon broached heads flex over 180 degrees to give all angles of turning action. With the handle in a vertical position, the nut can be spun on and the handle then flexed over for the final tightening, an important feature for fast nut turning. With the handle in a horizontal position, little overhead clearance is necessary, making the wrench useful for work beneath cross members or other obstructions.

These wrenches have different-size openings at each end for greater adaptability and are available in the following sizes: ⅜ and 7/16, ½ and 9/16, and ⅝ and ¾ inch. Overall lengths range from 5⅝ inches for the smallest to 8¾ inches for the largest. All of the wrenches are chrome-plated.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 58.

Inert-Gas Arc-Welding

A 16-page descriptive booklet on Heliwelding, an inert-gas shielded-arc welding process, has been prepared by the Air Reduction Sales Co., a Division of Air Reduction Co., Inc., 60 E. 42nd St., New York 17, N. Y. Illustrated with more than 25 photographs, sketches, and tables, Catalog No. 9 explains the process and when to use it. It also contains sections on equipment for manual, semi-automatic, and automatic operation; a new automatic filler-wire feeder; and power equipment.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 8.

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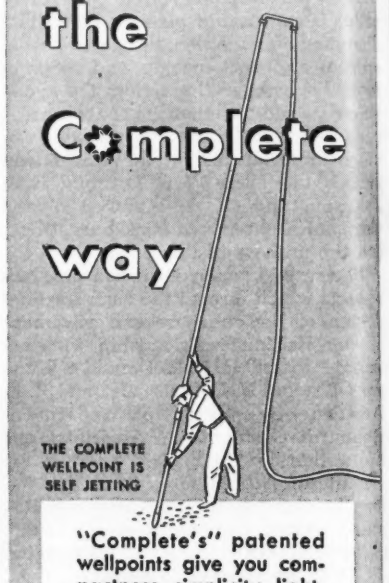

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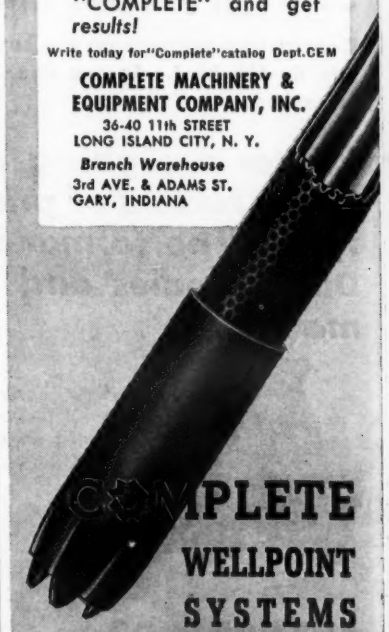

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All's Well With 1950, AED Delegates Agree

Distributors Get Ready for '50 by Appraising Their Sales, Service, and Finance Problems; Elect Officers

+ MODERATE optimism over the 1950 outlook pervaded the 31st Annual Meeting of the Associated Equipment Distributors in Chicago during January. However, the pressing need for more attention to all phases of management, sales, and service during the competitive 1950's was stressed again and again at the business sessions and panels of the four-day conference at the Stevens Hotel.

Opening-Day Panel

The program opened officially on January 16 with a welcome to the 1,700 delegates from Retiring President W. W. Bucher, who urged them to analyze their business operations carefully to do away with the hidden costs and leaks which up the expenses of doing business.

Then a six-man distributor panel moderated by W. A. Danner of Parker-Danner Co., Hyde Park, Mass., took the floor to discuss "Today's Problems and Tomorrow's Profits". Harry E. Shaw of Service Supply Co., Philadelphia, led off by cautioning distributors to determine their objectives in entering the rental field and to pattern their organizations accordingly. A. H. Jensen of Boehck Equipment Co., Milwaukee, led the subsequent discussion of rental purchases and the problems underlying this type of agreement.

C. M. Weinberg of Brown-Bevis Equipment Co., Los Angeles, who presented his observations on present-day financing, credit, and collection problems, was followed that afternoon by P. A. Dufford of Intermountain Equipment Co., Boise, Idaho, who outlined the factors governing a distributor's inventory policy—the problem of maintaining adequate turnover while meeting the needs of the equipment user.

Discussing the current trade-in situation, T. M. Sheehan of Empire Equipment Co., Sioux Falls, S. Dak., called attention to the importance of establishing adequate yardsticks for measuring the true value of trade-ins. J. T. Hatten of Star Machinery Co., Seattle, summarized the major questions distributors must solve in any approach to the matter of effective sales training.

1950 AED officers: Left to right, front row, Frank G. Knight, Executive Secretary, Chicago; C. F. Halladay, President, Sioux Falls, S. Dak.; R. L. Arnold, Executive Vice President, Salt Lake City, Utah. Back row, left to right, R. J. Fyfe, CAED President, Regina, Sask., Canada; H. J. Hush, Vice President, New York, N.Y.; E. J. Crosby, Treasurer, S. Boston, Mass.; and J. A. Benson, Vice President, Houston, Texas.

Election of Officers

The second day of the conference and the afternoon of the third day were left free so that distributor and manufacturer members could get together for shop talk. The morning of the third day opened with the adoption of a resolution urging support of the Taft-Hartley law and with the election of 1950 officers.

C. F. Halladay of Halladay-Dettman Co., Sioux Falls, S. Dak., was elected President. R. L. Arnold of Arnold Machinery Co., Inc., Salt Lake City, Utah, was named Executive Vice President. Other 1950 Vice Presidents are H. J. Hush of Griffin Equipment Corp., New York City; J. A. Benson of Benson Tractor Co., Houston; and R. J. Fyfe of R. J. Fyfe Equipment Co., Regina, Sask., Canada. Treasurer is E. J. Crosby, Hedge & Mattheis, South Boston, Mass.

Directors for 1950 are as follows: Region 1, Howard E. Noble, Noble-Belisle Machinery, Inc., West Lebanon, N. H.; Region 2, H. J. Hush; Region 3, S. John Oechsle, Metalweld, Inc., Philadelphia; Region 4, O. W. Robinson, West Virginia Mine Supply Co., Clarksburg, W. Va.; Region 5, E. J. Anderson, Tractor & Equipment Co., Birmingham, Ala.; Region 6, R. J. Finn, Bode-Finn Equipment Co., Cincinnati; Region 7, E. W. MacAllister, MacAllister Machinery Co., Indianapolis; Region 8, J. B. McWethy, Dakota Tractor & Equipment Co., Fargo, N. Dak.; Region 9, George W. Gagel, Machinery & Supplies Co., Kansas City, Mo.; Region 10, J. A. Benson; Region 11, Beal Shaw, Shaw Sales & Service Co., Los Angeles; Region 12, L. E. Jones, Hall-Perry Machinery Co., Butte, Mont.; Region 13, W. R. Parnell, Construction Machinery Corp., Shreveport, La.; Region 14, Frank Skidmore, Contractors Equipment & Supply Co., Albuquerque, N. Mex.; and Region 15, R. J. Fyfe.

Special Speakers

On Wednesday, the third day of the program, Frank G. Knight, Executive Secretary of the AED, told delegates that manufacturers will make a strong bid for major position among distribu-

(*Concluded on next page*)

TO THE MEN WHO OPERATE DRYER UNITS

MANY OPERATORS HAVE INVESTIGATED AND INSTALLED THE VOLCANIC LOW PRESSURE SYSTEM OF DRYER OIL BURNING. IN ALL OF THESE THE OWNERS HAVE FOUND FUEL SAVINGS OR INCREASED PRODUCTION.

YOUR LETTER TO US WILL BRING FORTH EITHER A QUALIFIED ENGINEER OR DATA BY MAIL GIVING YOU THE INFORMATION ON THIS EQUIPMENT.

HOPKINS'
VOLCANIC SPECIALTIES, INC.
P.O. BOX 899, ALLIANCE, OHIO

How to select the right trailer for your needs

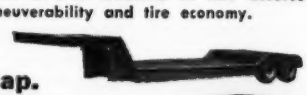
You'll save time, trouble and money by ordering *standard* La Crosse low beds — *"tailored"* to fit your individual hauling problems. Choice of flat, drop or low drop designs — with or without conversion dolly.

Single Axle; 8 to 15-ton cap.
A sturdy, low-cost trailer for bulky loads and medium-sized equipment, 2 wheels, 4 tires, plus exclusive brake and rim advantages.

Type DF-4

Type DF-6

Dual Axle; 18 to 32-ton cap.
Designed for heavy duty service at moderate cost. 4 wheels, with 8 tires mounted in line assures excellent maneuverability and tire economy.



Tandem Axle; 19 to 33-ton cap.
Most popular trailer in use. Tandem axle (solid or spring mounted) with 4 wheels, 8 tires, gives 4-way oscillation for level ride on any surface.

Type DF6-T

Oscillating Axles; 40 to 67-ton cap.
Best buy for extremely heavy loads. 4 oscillating axles with 8 wheels, 16 tires, assures uniform load distribution over roughest roads.

Type DF-12

Tilt Tops; 8 to 10-ton cap.
Ideal for one-man loading and unloading of tractors, etc., without skids or blocks. Platform tilts at axle . . . locks level for traveling.

Type TSA-2

LC-11

Check Today!

LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

☐ Rush details on La Crosse trailers. I am especially interested in Type.....Capacity.....

☐ Send name of nearest La Crosse Trailer distributor.

Name.....Title.....
Employed by.....
Address.....
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LA CROSSE
America's Favorite LOW BED TRAILER

All's Well With 1950, AED Delegates Agree

(Continued from preceding page)

tors during 1950, but that customers will expect better repair service, better parts service, and more efficient operation of equipment from the outset. There will be greater demand for financing and keener competition on prices. The distributor will have to bear down to improve salesmanship and to curb the rise of break-even points.

Clarence Y. Palitz, President of Credit-America Corp., reminded distributors that the near-future trend is toward a greater proportion of time sales. He suggested that if they would avoid losses, they use the services of a specialized institution to check credits of prospective purchasers. He also suggested that in selling used machinery on time, the dealer obtain a down payment of not less than 33⅓ per cent, with a limit of 12 months.

Thomas S. Holden, President of the F. W. Dodge Corp., appraised for delegates the 1949 construction record and the 1950 outlook. There will be no substantial upswing in construction volume this year, he said—there may even be a mild decline. But with the current revival in this country of the go-ahead spirit, "You should have good business this year, perhaps even bigger volume in the years to come."

Final Open-Forum Panel

The official business portion of the 1950 convention program was concluded with an open-forum panel composed of six leading distributors and six leading manufacturers of construction equipment, who discussed key problems relating to service, finance, advertising and promotion, training and education, production, inventories, general trade practice, and the market situation.

Distributor participants were R. L. Arnold, Arnold Machinery Co., Salt Lake City; J. A. Benson; M. L. Gibson, Gibson-Stewart Co., Cleveland, Ohio; M. J. Lyons, Lyons Machinery Co., Little Rock, Ark.; and S. J. Oechsle.

Manufacturers taking part were J. E. Carroll, American Hoist & Derrick Co.; M. B. Garber, The Thew Shovel Co.; W. B. Greene, Barber-Greene Co.; Kenneth Lindsay, Iowa Mfg. Co.; Harold Reishus, International Harvester Co.; and L. G. Schraub, Union Wire Rope Corp.

Festivities

Among the entertainment highlights of the convention were the 31st Annual Birthday Party in honor of Retiring President Bucher, and an Early Bird's Breakfast in his honor given by distributor members from his region—New York and New Jersey. Top-ranking speakers addressed the delegates at luncheons on the opening and closing days of the convention, and 1950 officers and directors took over at an Installation Luncheon on January 18.

Book Shows How to Design With Aluminum Extrusions

The basic engineering principles that enable the designer to use extruded aluminum shapes most effectively are well explained and illustrated in a new 138-page book called "Designing With Aluminum Extrusions", recently issued by Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky. The book breaks down the features of the extrusion process into eight principles of design, then illustrates and explains each of these in detail by diagrams, charts, and pictures of actual parts.

The section on manufacturing possibilities explains the broad range of shapes that can be produced by the extrusion process. Since certain extruded shapes are used as structural or load-carrying members, a chapter is devoted to the principles of structural design. One of the important features of extrusion is the ability to produce parts which interlock, using dovetail, contour, snap, or sliding fits. A section of the book is devoted to this subject.

The fact that complicated shapes are easily produced by extrusion offers unique possibilities for mechanically connecting adjoining members. A section on joint design contains 39 illustrations of suggested connection methods. The characteristics of aluminum itself, the selection of the correct alloy and temper, fabricating properties, finishes, and cost factors are also covered in a separate chapter. In addition, the tabular section presents 16 tables (22 pages) of data on chemical, mechanical, and physical properties of aluminum; and on the extrusion process itself—minimum thicknesses, maximum lengths, tolerances, difficulty factors, and the like. Two tables on finishes and joining methods are of special value.

This 138-page pocket-size book has over 390 illustrations, a table of contents, index of tabular material, index of illustrations, and an itemized cross index covering text, illustrations, and tables.

A copy of the book may be obtained by writing the Reynolds Metals Co. on your company letterhead. Or use the Request Card at page 16. Circle No. 105.

Especially designed for use in the Philippine Islands, this Lippmann portable secondary crushing plant weighs 25,000 pounds and has an overall width of 8 feet in transit.

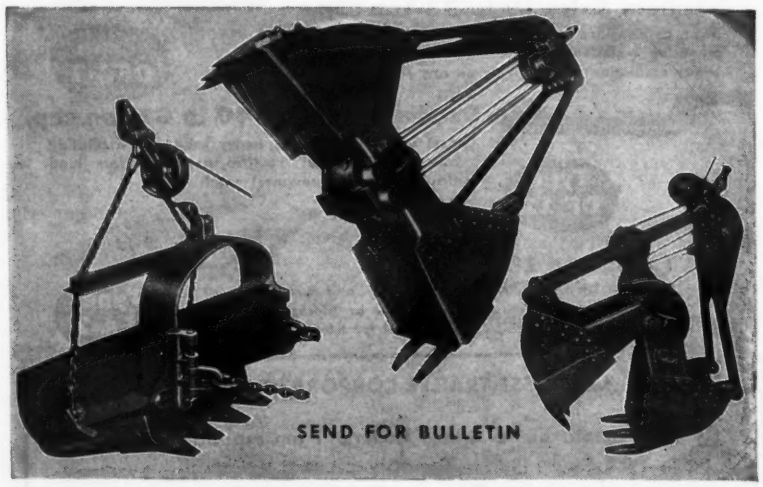
A Special Crusher For the Philippines

The expansion and reconstruction of the Philippine road system, being carried out under the Rehabilitation Act of 1946, has created special problems for equipment manufacturers. Lippmann Engineering Works has manufactured a lightweight portable secondary crushing plant for the Abra Provincial Department of Roads. The plant is designed especially for travel over light bridges and roads on the Abra Provence road-building projects.

Weighing 25,000 pounds, the plant has an overall length of 36 feet 2 inches, an overall height of 11 feet 1 inch, an overall operating width of 24 feet, and an 8-foot overall width in transit. It produces material in 3/16, ½, and ¾-inch sizes, in amounts which exceed the requirements of the Department of Roads.

Fifty Years for Schramm

This year, Schramm, Inc., is celebrating its fiftieth anniversary. The company was founded in Philadelphia in 1900 by Chris D. Schramm, who was later joined by his son Henry N. Schramm, now President. From a modest beginning as a little machine shop specializing in the sale and service of gas-producer engine installations, the firm has grown to its present proportions as a manufacturer of compressors, engines, pumps, hoists, and a complete line of construction tools.



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Count on longer life and more efficient service..due to Wellman original **welded rolled steel construction.** You get the maximum digging power, and exceptional strength—without excessive weight! Specify Wellman, and you'll specify the best bucket for your purpose.

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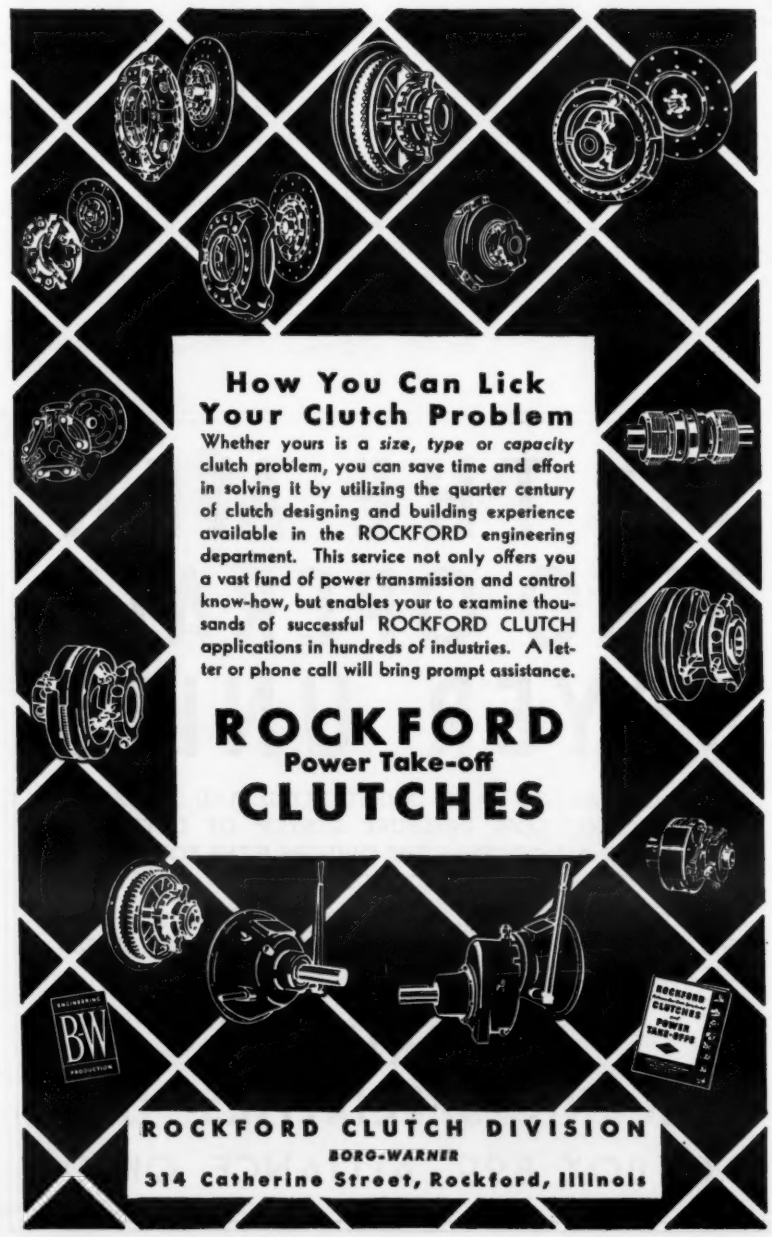
How You Can Lick Your Clutch Problem
Whether yours is a size, type or capacity clutch problem, you can save time and effort in solving it by utilizing the quarter century of clutch designing and building experience available in the ROCKFORD engineering department. This service not only offers you a vast fund of power transmission and control know-how, but enables your to examine thousands of successful ROCKFORD CLUTCH applications in hundreds of industries. A letter or phone call will bring prompt assistance.
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BORG-WARNER
314 Catherine Street, Rockford, Illinois

The Highway Problem In the United States

(*Continued from page 3*)

as a good beginning for the requirements of the future. But in following a course that was expedient, we were laying the groundwork for trouble later on. In doing the best we could with what we had, we were perpetuating with relatively permanent surfaces a network of roads which would eventually prove totally inadequate in width and alignment and other major respects.

Shortsightedness to Blame

As a result of record-breaking road construction efforts in the 1920's and '30's, we surfaced the almost unbelievable total of 1,000,000 miles of highway. In terms of speed and physical dimensions, this was a tremendous accomplishment. But in view of the traffic trends already taking place, the nature of much of this effort reflected singular shortsightedness. The number of motor vehicles increased by 12,000,000 units in the five years from 1921 to 1926, and another 10,000,000 were to be added by 1941. When it came to widening and straightening the roads we had built in such a hurry, homes and businesses had grown up along the narrow right-of-ways, forming continuous ribbons of roadside development. The cost of modernization, therefore, was multiplied by the land and damage costs which were involved in acquiring the necessary right-of-way.

But a second basic error of public policy resulting from the urgency of the early highway program was the almost complete disregard of urban highways and the refusal to consider terminal requirements a part of the highway transportation problem. When the automobile came of age, most of our cities could boast a considerable mileage of surfaced streets. The immediate problem, therefore, was to provide all-weather surfaces in rural areas. But the temporary expedient of concentrating on rural requirements and excluding the city was later to become permanent policy. And the fact that curb space had proved adequate to meet the parking needs of the horse and buggy led to the conclusion that the automobile could get by with the same arrangements. As a result, the motor vehicle has never been at home in the city, either on the streets or off them.

Old Problems Still With Us

Today the inadequacies of the early automobile are no longer a problem, since the average life of the vehicle is short enough to let bygones be bygones. But the lengthy service life of our highways means that the problems created twenty to forty years ago are still with us, and the task of doing something about them is often physically complicated and financially embarrassing. A large mileage of our main highways in rural areas and in cities is not only obsolete, but in many cases in a state of physical breakdown. And the task of replacement means not simply a duplication of the old order, but improvement of these facilities to the far higher standards required to accommodate today's traffic and the traffic of tomorrow.

From the standpoint of the cost and quality of automotive transportation, the large-scale requirements of the highway system and the difficulties of financing these requirements are of basic importance. Without streets and roads capable of carrying traffic with reasonable safety and efficiency, an inferior quality of transportation service is assured. And the cost of vehicle operation is determined to an important degree by the condition of the highway system. Inadequate highways mean high gasoline consumption, increased wear and tear on the vehicle, and higher accident rates.

Outlook Not Too Promising

What are the possibilities then of rectifying the accumulated obsolescence of the highway system and making adequate provision for the rapidly expanding volume of traffic? Under existing highway policies the outlook is not too promising. There are several reasons for this pessimism. The record road mileage constructed during the twenties is approaching the end of its useful life at about the same time, causing an accumulation of replacement demands just when we are trying to meet new demands. We also have to compensate for the reduced highway construction program during the war, as well as accommodate the spectacular increases in both passenger car and truck traffic since 1940. (We have 18,000,000 more people and 11,000,000 more vehicles than we had in 1940!) To make the problem more difficult, highway needs are concentrated in and around large cities, where past neglect has been greatest, and where the cost of providing modern facilities is highest. Finally, these requirements are being felt at a time when construction costs are far above pre-war levels, but when highway revenues do not as yet reflect recent changes in the value of the dollar.

A cursory review of the technological possibilities in the automotive industries should be convincing enough that return to a buyers' market will bring new and significant improvement in the vehicle and its performance; and there is evidence that economy of operation will be a primary factor in these innovations. It would be erroneous to suppose, however, that automotive technology can solve the highway transportation problem. As a matter of fact, the increase in vehicle ownership and use bound to result from automotive developments might conceivably lower the standard of transportation service by further aggravating highway and parking problems. If maximum service and minimum cost are to be achieved, there will have to be comparable gains in the effectiveness of the highway program.

(*Concluded on next page*)

La Mura Contracting Co. digs foundations for a new housing project in Mt. Vernon, N.Y. That's a Bucyrus-Erie 38-B shovel which is handling the big boulder and is about to load it into a Mack truck.

White Heating Kettles Have Fire-Proof Tops

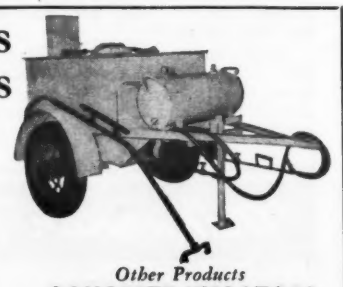
Cut-back and highly inflammable road repair material can be heated safely in White kettles. FIRE-PROOF top reduces fire hazard.

White asphalt and tar kettles are extensively used. They give long life and satisfaction.

Plain kettles or with hand or engine driven spray pumps for pavement patching. Thermometers, barrel hoist, warming hood extra. All oil burning. Springs, pneumatic tires. 65, 110, 220, 300-gallon capacities. Model F-10 is oil-jacketed to heat elastic joint filler.

White Mfg. Co.

ELKHART INDIANA



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Gasoline Engine and Electric Motor Driven Models
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ASPHALT PLANTS
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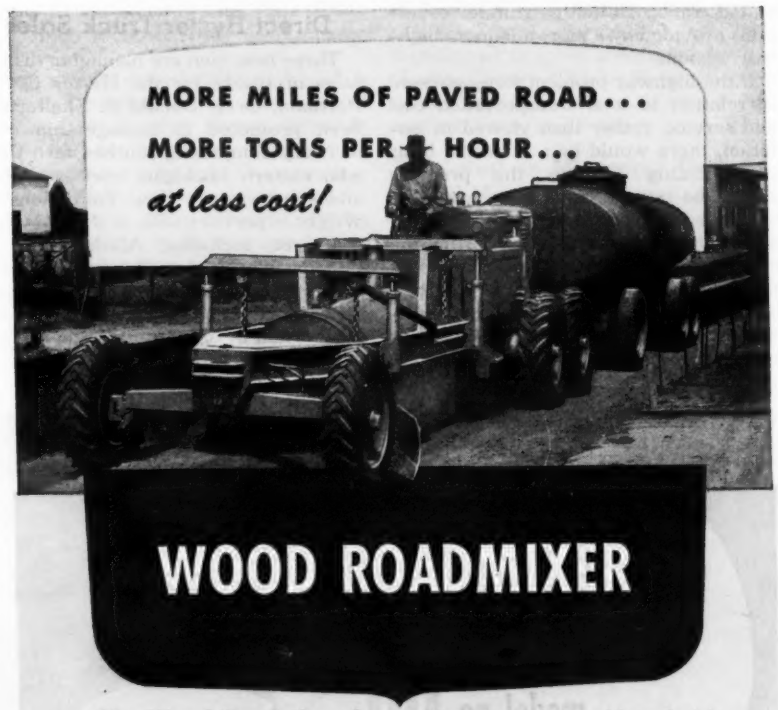


WOOD ROADMIXER

The Wood Roadmixer is your best answer to modern low cost mix-in-place construction. Here's why:

LESS MANPOWER—this *one man operated* traveling mixing plant takes low cost native materials and thoroughly mixes with emulsion, road oil or soil cement binders in one pass—windrowed and ready for spreading and compaction.

HIGH PRODUCTION, LOW COST—up to 350 tons mixed per hour at less than 7 cents a ton is not uncommon.

FULL JOB CONTROL—from start to finish. You control the rate of travel, the pressure of binder, the uniform pickup of material. With measured windrow and supervision of aggregate you're assured a surface of uniform quality every time!

SELF PROPELLED—to and from the job speeds of 15 MPH and working speeds up to 40 ft. per minute!

MORE THOROUGH MIXING—pug mill mixing drum provides 200 mixing passes in 45 seconds! Compare this to the 1 to 4 passes provided by other mixers.

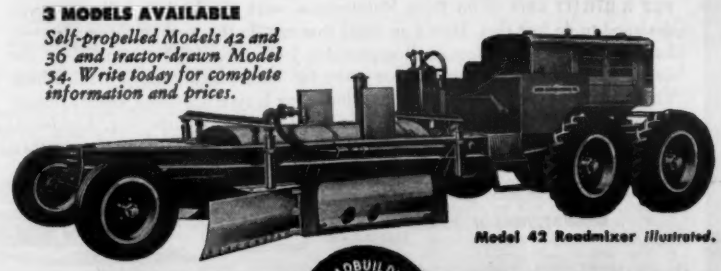
MANEUVERABLE as a motor patrol—uses pneumatic tires. Assures adequate traction in low bearing soils.

PLENTY OF ROADBUILDING APPLICATIONS—surfaces secondary roads, airfields, road shoulders, parking areas and detours. Subsurfaces major roads and airfields.

ACCEPTED AND RECOMMENDED by a majority of state highway departments, by the Civil Aeronautics Authority, U. S. Bureau of Public Roads, and the U. S. Army and Navy.

3 MODELS AVAILABLE

Self-propelled Models 42 and 36 and tractor-drawn Model 54. Write today for complete information and prices.



Model 42 Roadmixer *Illustrated.*

ROADBUILDING EQUIPMENT
WOOD MANUFACTURING CO.

BOX 620 · 6900 TUJUNGA AVENUE · NORTH HOLLYWOOD, CALIF.

The Highway Problem In the United States

(*Continued from preceding page*)

Not Just a Money Problem

Providing good roads is partly a problem of providing the necessary funds; but it would be an oversimplification to conclude that the highway problem is only a money problem. Basically what is required is a program which recognizes the fact that safe, dependable, and efficient highways are as important to our objective as good vehicles. Such a program calls first of all for businesslike management of the highways. This means effective use of existing faciliities; wise application of the funds at hand; and forward-looking legislation to assure access control and off-street parking provisions. Whether or not more money is needed, and whether it should be provided through additional taxes or through borrowing, are questions to be answered in each state individually. The desirable size of the program can be determined by comparing the cost of transportation under existing conditions with the estimated transportation cost under conditions provided by a more adequate highway system.

If the highway problem were assessed in relation to total transportation cost and service, rather than viewed in isolation, there would be a scientific basis for deciding whether the program should be revised. And there would be no basis for current contentions among industry and user groups sharing the responsibilities and benefits of highway transportation. Whenever the facts showed that spending more on highways would mean spending less on highway transportation, with better service added, the desirability of an accelerated road-building program would be clear.

Book on Structural Problems

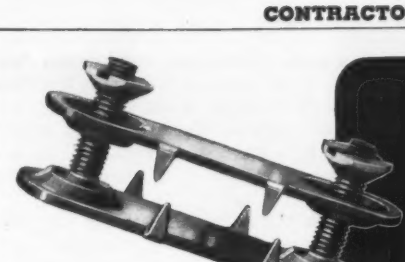
"Elementary Structural Problems in Steel and Timber" by C. R. Young and C. F. Morrison is now available in a third edition. This book stresses the practical aspect of structural design. Problems involving the design of beams, girders, trusses, and other timber and steel structures are presented and solved in detail so that the reader can see how such problems are handled in industry. The authors have included a complete bibliography of standard references on structural theory for convenience in obtaining background data.

The most extensive revisions in the third edition have been made in Part II, "Timber Structures", which has been rewritten and expanded. A more complete coverage of modern timber engineering is the result.

Copies of this book may be obtained for $4.50 each from John Wiley & Sons, Inc., 440 Fourth Ave., New York 2, N. Y.

Direct Hyster Truck Sales

Three new men are managing district sales of trucks for the Hyster Co., of Portland, Oreg. Donald R. Shaffer has been promoted to managership of a territory comprising southeastern Canada, eastern Michigan, northern Ohio, and southwestern New York. John F. Wright supervises sales in a large western area including Alaska, western Canada, Washington, Oregon, and parts of Montana and Idaho. Karl T. Barr directs truck sales in the Hawaiian Islands and in California, Arizona, Nevada, and Utah.



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FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

FLEXCO Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

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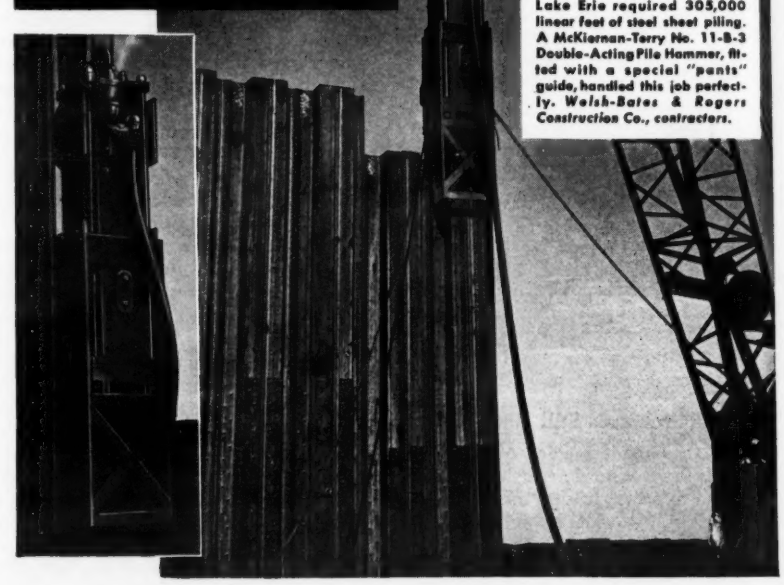
To Cut Out SLOW RIVER TRAFFIC



The bulkhead walls of the three new docks of the Lakefront Dock and Railroad Co. at the mouth of the Maumee river in Lake Erie required 305,000 linear feet of steel sheet piling. A McKiernan-Terry No. 11-B-3 Double-Acting Pile Hammer, fitted with a special "pants" guide, handled this job perfectly. *Welsh-Bates & Rogers Construction Co., contractors.*

These long-needed docks enable the lanky lake vessels to pick up coal loads right at the lake front, without the tedious, bridge-hampered trip five to seven miles up the river to Toledo, formerly necessary.

Fitted with a specially designed guide to insure accuracy, this powerful 11-B-3 McKiernan-Terry Hammer, packing a 19,500 foot-pound wallop, was the contractors' natural choice for handling the big steel sheets.

For engineers and contractors all know that the McKiernan-Terry standard line of ten double-acting and five single-acting pile hammers and two double-acting pile extractors can always supply a piece of equipment of the power needed for any specified pile-handling operation.

McKIERNAN-TERRY VERSATILITY

Coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment are among the many other important products of McKiernan-Terry engineering and manufacturing skill that are performing important service to industry, the railroads and our government.

FOR FULL DATA

Write for free literature on the McKiernan-Terry line, giving specifications and pictures of these hammers on varied jobs. Send request on your business letterhead today.

MK 268 A

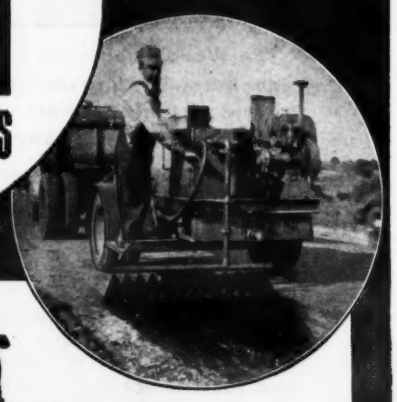
McKIERNAN-TERRY CORPORATION, Manufacturing Engineers, 19 Park Row, New York 7, N. Y.

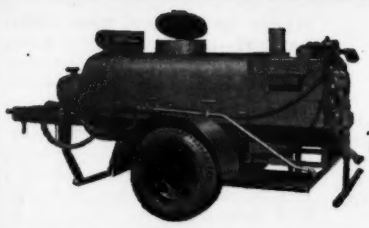
McKiernan-Terry PILE HAMMERS AND EXTRACTORS

LITTLEFORD

model no. 101

UTILITY SPRAY TANKS





takes the place of three units

FOR A UTILITY UNIT to do Road Maintenance work the Littleford No. 101 was designed to do just that. Here's an outfit that can do the work of three units—it has a spray bar for doing small application jobs, a hand spray attachment for doing patch work and a pouring pot outlet for doing patch work or crack filling. This 101 Unit has a fast heating system including U type heat flues with Littleford Vaporizing Torch Burners. The No. 101 will handle Asphalt, Tar, Emulsion, Road Oils or Cutback. Made in sizes to fit any road maintenance job. For further details see your nearest Littleford distributor.

MANUFACTURERS OF "Tankar" Steam Heaters, "Kwik-Melter" Roofers Kettles, Trail-O-Rollers; "Spray Master" Pressure Distributors, Highway Brooms, Tool Heaters, Trail-O-Distributors

LB LITTLEFORD — BLACK TOP ROAD MAINTENANCE EQUIPMENT — SINCE 1900

Asphalt Supply Tanks
No. 101 Utility Spray Tanks
84-HD Asphalt Kettles

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Distributor Doings

Four New Crusher Representatives

Pennsylvania Crusher Co. of Philadelphia is distributing its equipment through four new representatives. Stanley B. Troyer, Crosby, Minn., is serving Minnesota, the northern half of Wisconsin, and Michigan's upper peninsula; the company also handles air tools, belting, compressors, drills, pumps, cranes, and tractors. Leatherman & Mertz of Detroit represents Pennsylvania Crusher in Detroit and the northern and eastern counties of Michigan's lower peninsula; the company also carries valves, burners, blowers, etc. Wharton L. Peters Machinery Co., St. Louis agent for manufacturers of heavy machinery, now handles Pennsylvania's complete line of crushing equipment in Missouri and the southern counties of Illinois and Indiana. And finally, The Swaney Co. of Newtonville, Mass., serves Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine.

Bowles Serves Stow in Southwest

The Stanley D. Bowles Co., 3406 Main St., Dallas, Texas, is now handling the complete line of truck pump shafts, vibrators, and flexible-shaft machines made by Stow Mfg. Co. of Binghamton, N. Y. The company's territory consists of New Mexico, Texas, Oklahoma, Arkansas, and Louisiana. It maintains branch offices in Oklahoma City, Houston, and New Orleans.

Huber Account Goes to Armstrong

Armstrong Equipment Co. of Birmingham is now handling the complete line of Huber Mfg. Co. road equipment in northern Alabama. W. E. Armstrong heads the company, which was established approximately five years ago and maintains headquarters at 4601 First Ave. N. Other key personnel include Herman King, Service Manager, and John Maura, Bob Woodman, and Briggs Rogers, all sales representatives.

Rothschild Forms a New Organization

Max H. Rothschild, for more than 20 years President of the Complete Machinery & Equipment Co., has formed a new sales and rental organization called Foundation Equipment Corp., at 38th Ave. and 10th St., Long Island City 1, N. Y. Most of the personnel associated with him in his former company are now with him in the new one, and he has taken over from Complete Machinery & Equipment Co. its shop building and 50 per cent of its equipment and inventory.

Foundation will distribute lines made by Marlow Pump Co., Ingersoll-Rand Co., Mall Tool Co., and Gar-Bro Mfg. Co. It will also manufacture dust-control equipment, wellpoint systems, and jetting pumps.

Grant Named for Marion in West

C. H. Grant Co. with offices and warehouse at 1401 Eastshore Highway, Berkeley, Calif., has been appointed Marion Power Shovel Co. distributor for northern California and western Nevada. The firm will represent Marion in a territory covering that part of California north of and including the counties of Monterey, Kings, and Tulare, with the exception of the counties of Mono and Inyo; and the following counties in Nevada—Washoe, Humboldt, Pershing, Churchill, Storey, Lyon, Ormsby, Douglas, Mineral, Esmeralda, and Nye.

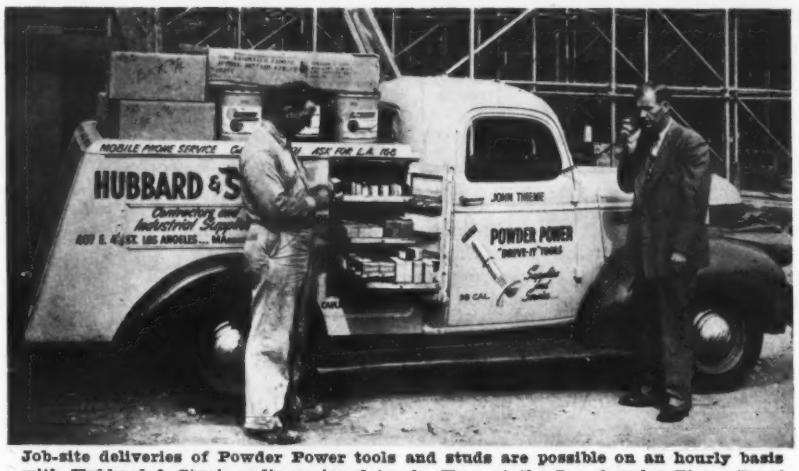
New Casper Plant for Cobusco

The Colorado Builders Supply Co., machinery and materials firm with plants in Colorado, New Mexico, and Wyoming, has recently constructed new buildings in Casper, Wyo. The plant is fully equipped for repair and maintenance work on road-building machinery.

Thomas Duncan is Manager of the equipment division of the Cobusco Wyoming plant; John L. Dynan, Jr., is Manager of the materials divisions in Wyoming.

Eastern Outlet for Mir-O-Col

The Vosco Electric Sales Co. of 11 Court St., Newtonville 60, Mass., is the eastern representative for Mir-O-Col Alloy Co. of Los Angeles. Its territory includes Maryland, Delaware, Pennsylvania, New Jersey, New York, and the New England states. Mir-O-Col products which Vosco handles comprise a complete line of hardfacing electrodes and acetylene rods.



Job-site deliveries of Powder Power tools and studs are possible on an hourly basis with Hubbard & Stau's radio-equipped truck. Here at the Los Angeles Times Boys' School building site, George Sanderlin, left, Construction Superintendent with P. J. Walker Co., takes delivery from John Thieme, H & S engineer.

Radio-Phone Emergency Service

Emergencies are emergencies to Hubbard & Stau, Los Angeles distributor, and are handled immediately, if not sooner. Harassed contractors are connected by radio-phone to an H & S supply truck in the field. The truck then alters its scheduled trip in answer to their SOS.

One of the newest lines Hubbard & Stau is providing in the Los Angeles area is the Powder Power Drive-It tool, a stud-anchoring gun for either .22 or .38-caliber cartridges. The company says that the development of uses for the Drive-It method—from setting studs for signs to large construction jobs—kept it pretty well on the jump until the radio-phone-equipped truck was put in service. Now its representative with the truck deviates from his regular run to service any customer who needs equipment in a hurry.

Penn Shifts N. Y. Representatives

The H. O. Penn Machinery Co. of New York City has announced that Hal Barber, who has been representing the firm in Kings County, has been transferred to cover a portion of Westchester County. Charles Rand, formerly selling in Kings County, is now representing Penn in Brooklyn.

The Latest on Mississippi Dealer

Road Material & Equipment Co., Inc., of Jackson, Miss., has passed along the latest news on the expansion of its line and changes in its staff. In addition to P & H draglines, shovels, welders, Single Pass Stabilizers, electrodes, etc., it

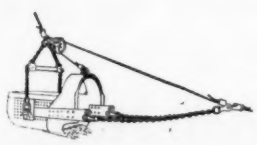
(Concluded on next page)

OMAHA DRAGLINE BUCKETS

Tops 'em all!

IN PAYLOAD

Constant research and redesigning of Omaha Buckets has caused a saving of 25% of the total weight. This means a bigger load with an extra payload built in. With Omaha Buckets you move Dirt . . . instead of steel.

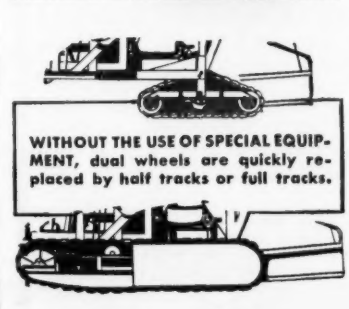


IN PROFIT

Omaha Buckets make every cast and load pay off with an extra payload. In all kinds of digging the job is done quicker, easier. Operators fill their daily quotas. You'll find that on the job and on the job record, Omaha Dragline Buckets pay off with a Profit!

DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.

cut TRENCHING costs!



BADGER
TRENCH EXCAVATOR
FAST, CLEAN, ECONOMICAL
7 to 24 inch width
up to 11 foot depth

Pennies saved per foot of trenching assure more profit dollars per job!

Over fifty advancing speeds equip the one-man *economical* Badger Trench Excavator to operate *in and on* any kind of soil. Patented high speed shovels dig fast and uniformly . . . do not require an unwieldly, bulky machine to assure 'bite' or purchase. Reversible cross conveyor and trench shields keep waste away from trench. Overload safety clutch protects machine and prevents damage as the Badger digs forward or backward, over, under and around obstructions. Ball bearings on all high speed shafts and bronze or babbitt bearings on low speed high torque shafts assure long life dependability.

WITHOUT THE USE OF SPECIAL EQUIPMENT, dual wheels are quickly replaced by half tracks or full tracks.

25 MPH ROAD SPEED

Model 202 with rear dual wheels offers cost-cutting mobility of twenty-five MPH road speed. Eight MPH is recommended speed when unit is equipped with tracks or half tracks. All Badger units are easily transported on 1½ ton truck.

Contractors, municipalities and utility companies are cutting costs and boosting profits with the Badger Trench Excavator. Let the Badger dig for profits for you, too!

Write Today FOR COMPLETE INFORMATION

BADGER MACHINE CO.

Dept. E WINONA, MINNESOTA

Distributor Doings

(*Continued from preceding page*)

now carries several other lines: Galion motor graders and rollers; Schramm compressors and pneumatic tools; Smith concrete mixers and bulk-cement spreaders; Pettibone Mulliken loaders, buckets, asphalt plants, etc.; Haiss loaders and elevators, etc.; Universal crushers and screening plants; Wayer Impactors; Essick plaster mixers and hoists.

As for its staff, President Lee M. Cauble notes the appointment of D. V. Bishop as Sales Manager of the Equipment Division; W. E. Welch as Manager of the Parts Department; and J. O. Walden as Service Manager.

Long Island Dealer for Nelson

Whaley Bros, Inc., 49-05 Fifth St., Long Island City, N. Y., has been added to the list of authorized dealers for stud-welding equipment manufactured by the Nelson Stud Welding Division of Morton Gregory Corp. The firm will handle the welding equipment on a sales, rental, and service basis.

Represents LeTourneau in Texas

Berry Brothers Machinery Co. of Dallas has been appointed LeTourneau distributor for the northeast Texas territory. The partnership headed by Roscoe and Sherman Berry has been operating since 1943. It has a fleet of five service trucks and a staff of 26 men trained in shop and service work.

Roller Dealer Named in Denver

Colorado contractors can now obtain Hercules road rollers, made by the W. A. Riddell Corp. of Bucyrus, Ohio, from Graham Road Equipment Co., Inc., 3325 Brighton Blvd., Denver, Colo. Edward Graham is President of this company and Lee H. Graham is General Manager.

To Handle Dravo Piping in Midwest

Geo. B. Limbert & Co., Inc., of Chicago, has been appointed representative for Dravo Corp., Pittsburgh, in the sale and installation of fabricated piping for industrial plants, water works, gas transmission systems, and other services. The firm's territory consists of Illinois, Wisconsin, Minnesota, Iowa, northwest Indiana, western Michigan, and St. Louis County in Missouri. DeWitt C. Showers and John D. Purdy head the company, which has its offices at 208 S. LaSalle St. in Chicago.

As happy as a kid with a new toy, Contractor E. E. Collins of Miami (left center) tells H. J. Midgette, Vice President of the Florida-Georgia Tractor Co. of Miami, the plans he has for his new International TD-24 diesel crawler. Lulie Patterson (on the '24) and Collins' Superintendent Earl Sanders (in the pick-up) take it all in.

Mercer Sells Le-Hi Line in South

Mercer Rubber Co., 1601 Maury St., Houston, Texas, now handles the Le-Hi line of high and low-pressure hose couplings made by Hose Accessories Co., of Philadelphia. The firm's territory includes Texas, Oklahoma, Arkansas, and Louisiana.

New Account, New Mgr. for Bemiss

Bemiss Equipment Corp., of Richmond and Roanoke, Va., has been named a distributor for the American Steel & Wire Co., a subsidiary of U. S. Steel. Its equipment inventory now includes American's Tiger Brand wire rope.

The company also announces that T. Sudderth is now Branch Manager at Roanoke.

Want a Latin-American Outlet?

Renán Moreira, Edificio Radiocentro, Vedado, Habana, Cuba, is interested in acting as the Latin-American field representative for a small number of allied non-competitive lines of road-building and transport equipment. Mr. Moreira has had experienced as an Export Manager for an American manufacturer of construction equipment, and he has an extensive knowledge of the Latin-American market.

Further information may be obtained by contacting Mr. Moreira.

New Wood-Auger Bits

A new line of wood-auger bits for use with electric drills is announced by The Midway Tool Co., Inc., Melvin, Ohio. These are available individually in 13 sizes from ¼ to 1 inch. They are also packed in two handy sets of 6 and 13 bits each.

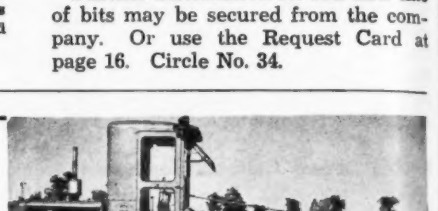
Made of special chrome-alloy steel, each bit is accurately hammer-forged. The screws are centered by precision machinery, and bit throats are clear and open to facilitate chip clearance. According to the manufacturer, each bit is subjected to more than 50 individual manufacturing operations. Another of its features is its smooth Mirbrite rust-resistant finish.

Further information on this new line of bits may be secured from the company. Or use the Request Card at page 16. Circle No. 34.

BEADLE OIL ROAD SMOOTHER

Cuts Costs 2/3!

Attach it to your grader for cutting and pulverizing high shoulders and bumps, filling in depressions, and compacting the material into a new wearing surface. Write for circular.



COATES MANUFACTURING COMPANY
CORYDON IOWA

SPRING IS HERE . . . . . .

. . . . bringing many uses for

BURCH "TILT-LEV"

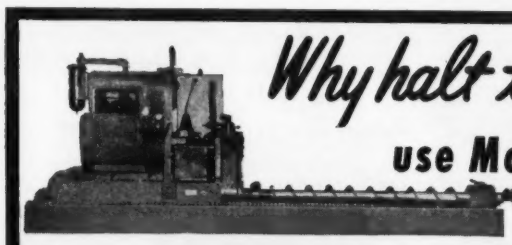
For spring—for year 'round, in fact—you can't beat this general purpose "Tilt-lev" blade. Blade angle and pressure are controlled from cab by means of four hydraulic cylinders. Auxiliary blade brings in sufficient material to help fill low places.

Tilting feature of both blades gives greater clearance. Attaches to any standard truck—works best on heavy-duty truck.

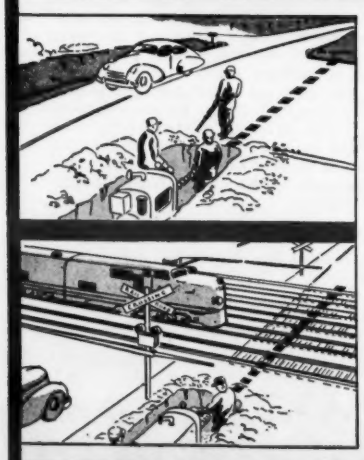
Write for complete data—folder CE-350

THE BURCH CORPORATION
CRESTLINE, OHIO

Why halt traffic?
use McCarthy



Heavy Duty
PUBLIC UTILITY DRILLS



You can make any size horizontal hole from 4 to 24 inches in diameter with the McCarthy Heavy Duty Public Utility Drill, and you don't have to dig up pavement to do it!

The McCarthy is compactly built on a welded steel frame for easier handling; it's equipped with instant-action controls and plenty of power to assure smoother, more positive drilling performance. Standard model drills up to 12" holes, Heavy Duty model to 24".

The McCarthy has been thoroughly tested in the field, where its ability to bore holes up to depths of 180 feet horizontally has made it an outstanding favorite with contractors.

Write today or call The Salem Tool Company for complete information and prices. You'll find the McCarthy is your best investment for economical operations.

Manufacturers of Vertical and Horizontal Blast Hole Drills.

SALEM

THE SALEM TOOL CO.
769 S. ELLSWORTH AVE. • SALEM, OHIO

Here a Poulan gasoline-powered saw is equipped with a bow Speed Saw attachment for bucking.

Two Saw Attachments Are Interchangeable

A gasoline-powered saw with quick-mounting bow and straight chain-saw attachments is manufactured by the Poulan Saw Co., P. O. Box 3524, Shreveport, La. The bow Speed Saw, designed for bucking operations, is available in 20 and 27-inch capacities. The straight saw may be obtained in 21, 25, 35, and 49-inch capacities.

Features of the Poulan saws include a single cam lock for indexing and assembling, replaceable wearing parts, positive pressure lubrication, and an automatic clutch. Lubricating oil is fed directly into the guide by a conveniently located plunger. All cutting attachments can be swiveled and locked at any point, making a rigid connection between the engine and the transmission. For inspection of the clutch and for easier handling, the engine can be disassembled from the transmission by pulling one pin. It can be reassembled without the use of a wrench or other tool. One control is used to operate the power and the clutch.

The guidebar of the Poulan straight saw is made of solid stock so that it can easily be straightened if it becomes bent, according to the manufacturer. Special wear-resisting facings and end-to-end reversability are designed to give longer saw use. Long contact surface between the cutting link and the guide is also claimed by the maker of this equipment.

Further information on this saw and attachments may be secured from the company. Or use the Request Card at page 16. Circle No. 150.

Concrete Stain Used For Highway Divider

Two features—traffic safety and economical maintenance—have been incorporated in the construction of the new Federal-State Hillsboro Highway leading into Tampa, Fla. As illustrated in the accompanying photograph, a 4-foot-wide concrete division separates the opposing traffic lanes for a distance of 3 miles. This strip has been given a corrugated surface which, when driven upon, transmits a warning vibration to the driver. Also, in order that the division strip may be easily seen for long distances, it has been given two saturate coats of Kemiko stain.

The highway was built by the Brinson Construction Co., under the direct supervision of H. E. Lewis, Division Engineer, and Richey Green, Assistant Division Engineer.

Unlike surface paints, Kemiko penetrates into the pores becoming an integral part of the concrete. It is guaranteed by its manufacturer, Rohloff & Co., 918 North Western Ave., Hollywood 27, Calif., not to chip, crack or peel. It gives a permanent black color said to withstand heavy traffic and varying climatic conditions for many years without need of reapplication.

A 4-foot-wide concrete divider on the Hillsboro Highway leading into Tampa has been given a permanent black Kemiko stain, for improved visibility.

Further information may be secured from the company. Or by using the Request Card at page 16. Circle No. 67.

Southeastern Contractors And Officials Get Together

A joint cooperative committee has been set up between the Southeastern Association of State Highway Officials and the Southeastern Division of the American Road Builders' Association. This formal action was taken at the recent SASHO meeting in Little Rock.

The group will get together before annual meetings, and whenever conditions demand, to air problems vital to the contracting industry and the engineering representatives of the SASHO. Its purpose is to tighten cooperation between highway officials and contractors working in the twelve southeastern states.

The HYDRAULIC "HUSKY"

BE UP-TO-DATE—JOIN THE MONEY-SAVING CROWD

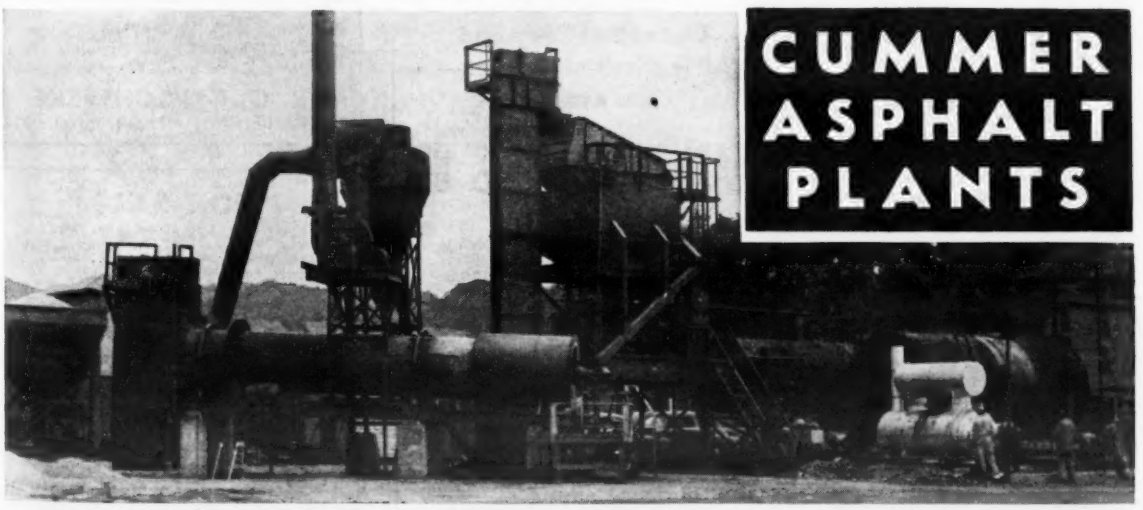
The All-Purpose "HUSKY" Grader-Ditcher-Terracer and Maintainer is the last word in better highway maintenance. It will cut your costs by half. It does the best work and does it just as fast or faster. True—most old-style constructed pull-types were and are N.G. But the "HUSKY" is a real quality pull-type. It eliminates the tendency to washboard.

Don't be kidded into believing this lighter work requires a big, heavy, expensive piece of equipment. *It Does Not.* The "HUSKY" will prove it.

Guaranteed against breakage for one year regardless of why it may break.

Manufactured by

NORTHFIELD IRON COMPANY, P.O. Box 30-D, Northfield, Minn., U.S.A.



55 to 60 TONS PER HOUR ASPHALT PLANT

- Equipped with feeder bin and feeder
- Dust collector discharging reclaimed dust into hot elevator
- Complete with storage tanks with hot oil heat
- Combustion by oil and low pressure air
- No steam used on plant

Sizes from 25 to 100 Tons (drying and mixing units) available

PROMPT SHIPMENT OF ALL SIZES

Feeders — Storage Bins — Pumps — Timer

Literature on request

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BUILDER OF FINE ASPHALT PLANTS

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New York 16, N. Y.

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for contractors, highway officials and distributors wanting further details or printed matter from the manufacturers advertising in these pages. Our Reader Service Department will be glad to forward any literature or special requests you mail to us at the above address.

CONTRACTORS AND ENGINEERS MONTHLY

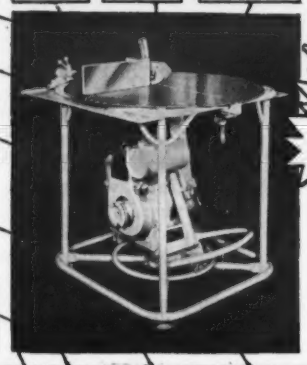
BIGGEST BARGAIN OF THE YEAR!

New MULTI-USE POWER SAW

COMPLETE PORTABILITY

SAWS WOOD · CUTS BRICK · CUTS METAL · CUTS CERAMICS

CROSS CUTS · ANGLE MITERS · RABBETS and TENONS · CUTS PLY WOOD



NOT DEPENDENT ON POWER LINES · CUTS RAFTERS · MITERS · BEVEL RIPS

ONCE-IN-A-LIFETIME SURPLUS SALE

was ~~$488.00~~

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$188.00

WITHOUT ENGINE $148.00 FOB Minneapolis, Minn., U.S.A.

TAKE THE SHOP TO THE JOB

Simply amazing portable power saw for cutting lumber of any length or width—up to four inches thick. Cuts metal trim, transite pipe, stone, brick, flue lining, tile or concrete in a matter of seconds quickly by attaching abrasive blade. Complete with Briggs & Stratton gas engine $188.00! Reduced from $488.00.

EVERY SAW GUARANTEED

SAVE—$300—SAVE

SPECIFICATIONS: Height 36 in.; Width 42 in.; Depth 39 in. Table Top 39½ in. diameter. Saw diameter 10 in. Gas Engine 3.6 H.P. operates all day for pennies. Shipping weight 460 lbs.

BRAND NEW! Made by one of World's leading Precision Equipment manufacturers. In original crates with all equipment.

PORTABLE! Self-contained 3.6 H.P. Briggs & Stratton or Wisconsin gasoline engine. Weighs only 340 pounds. Easily handled by two men. Ready to operate in less than 2 minutes. *Engine alone worth almost full cost of entire saw!*

ROTATING TABLE TOP! The ONLY portable power saw with rotating table for rapid change to all cutting angles. Big 3 foot table, marked in degrees and carpenter pitch, locks securely in any position.

SWINGING ARBOR! Balanced to swing away from operator for safety. Hand and foot guided. Operator's foot does the work.

SOMETHING NEW ADDED! Abrasive blades ($4.25 ea.) cuts steel shapes, sheets, pipe, tubing, aluminum, copper, etc. . . . 3 saws at practically the price of engine alone! Does the work of $1,000 worth of saw equipment. Roller tables available at $49.50. The *bargain* of a century. Write for information.

MAIL THIS COUPON TODAY!

Ennis Supply Company
334 First Street North
Minneapolis 1, Minnesota, U.S.A.

Please ship us ( ) Gasoline Portable Power Saws FOB MINNEAPOLIS . . . via ( ) Fast Freight ( ) Motor Truck.

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ADDRESS_____

CITY_____ ( ) STATE_____

ENNIS SUPPLY CO. 334 First Street North, AT. 1281 Minneapolis 1, Minnesota, U.S.A.

FOR SALE OR RENTAL

1—Guaranteed rebuilt P&H dragline or crane, ¾-Yd. less bucket . . . . . $6500.
1—Rebuilt Foote 27E Paver, long boom, new crawler pads . . . . . $4750.
1—"Quick-way" demonstrator, Model J, ¼ Cu. Yd. crane on GMC 6 x 4 truck, complete with outriggers . . . . . $6000.
1—Scoot-Crete loader (new) for charging 11S or 16S mixers . . . . . $1650.
Several 7S and 10S portable mixers, each . . . . . $500.
1—Winslow 23-Ton, 2 bin hopper, portable mounting . . . . . $1500.

CASEY and EMMERT, INC.
1424 West Ohio Street · Haymarket 1-6464 · Chicago 22, Illinois

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TRUCKS WANTED

Highest dollar value paid for new and used trucks and all kinds of used equipment. All types of truck equipment bought and sold, including war surplus. Write, phone or wire:

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A COMPLETE HYDRAULIC SERVICE

15 years' experience serving the Mining Industry repairing all kinds of Hydraulic equipment.

Can check and repair most any make pump, valve, motor and cylinder.

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NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
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REPAIRS TRANSITS LEVELS

We repair all makes of surveying instruments. Estimate always submitted before proceeding.

QUALITY GUARANTEED
THE GRAF-APSCO COMPANY
5868 Broadway · Chicago 40, Ill.

BOILERS
PORTABLE LOCOMOTIVE FIRE BOX
75 to 110 HP 150# ASME Code. New tubes and equipped with steam automizing oil burners.
NATIONAL BOILER & EQUIPMENT COMPANY
1501 S. Senate Ave., Indianapolis 25, Ind.

FOR SALE

ALL FOR $9,750

1—HD10W Allis-Chalmers dozcaster (new)
1—Fruehauf low boy trailer, 25-ton
1—GMC tractor—5th wheel, etc.

CARSON & SONS MARION, INDIANA

FOR SALE

Used parts for Model L Allis-Chalmer Crawler Tractor ½ of price of new parts

1—Model L Allis-Chalmer Tractor and arrow angledozer

1—8 to 11-yard Model LS LeTourneau Scraper, 3 years old in good condition; price for complete unit $11,000.00 F.O.B. Benedict, Nebr.

ELMER PIPER
Benedict, Nebraska

FOR SALE

Cletrac Model DD & DDH new & unused at below dealer's cost.

Phone—Write—Wire
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2300 Madison N.E., Minneapolis, Minn.
Phone—St. 4920

SELLING EQUIPMENT?

Are you planning to sell all or a portion of your equipment? Utilize the efficient, prompt Auction method to take advantage of periods of top demand. Properly advertised, properly conducted auctions assure you of top prices.

29 years of Auction experience, write or call for information.

FORKE BROS., & FICKE,
THE AUCTIONEERS.
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DRAGLINE BUCKET

For Sale

At East Chicago, Indiana Refinery—1 New Hendrix Type TS 1½ yd. Drag Line Bucket, complete. Ser. No. 5773. $750.00.

CITIES SERVICE OIL CO.
Patridge, Bartlesville, Okla.

FOR SALE

1—No. 56 Pioneer portable crushing plant powered by two D17000 Caterpillar Diesels equipped with 30-inch x 42-inch primary crusher, 24-inch x 54-inch roll crusher and with 40-inch x 12-foot traveling grizzly.

3—Koehring Dumptors Serial Number D-2577, D-2578 and D-2579.

3—LeTourneau Tournapulls.

1—2½-Yd. Marion dragline with 85-foot boom extension.

1—820 Lorain Shovel with dragline attachment, Serial No. 15544.

2—Caterpillar D-7 Tractors with dozers, Serial No. 3T-1548 and 7M-1414.

1—Caterpillar D-8 Tractor with dozer, Serial No. 2U-1239.

1—TD-18 International Tractor with dozer.

Various Other Construction Equipment All in Excellent Condition—Now Available

KEARNEY, CRUME & CO.

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Dallas, Texas
Phone: Tenneson 3-3783

DOLLY CONVERTERS

Complete with fifth wheel and pintle hook.

Price each $115.00 less tires, f.o.b. Dover, Delaware.

CONSOLIDATED INDUSTRIES
Dover 5791 · Dover, Delaware

FOR SALE

2—Int'l. KR11 dump trucks
10—Four wheel trailers 28' long with windows, insulated for office use
10—4000 gallon tank trailers suitable for gas, oil or water

BERMAN SALES CO.
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Ph. Pennsburg 521

Bargains in Used Tractors and Road Building Equipment—Write or Call

A. E. HUDSON COMPANY
Phone 4-9142. 120 W. Washington St., East Peoria, Ill.

FOR SALE OR LEASE

Lorain Motor Crane, Model MC-4—Year 1945
Lorain Motor Crane, Model 414—Year 1947
Bay City Motor Crane, Model 180-T60—Year 1948
All 20-ton capacity—80' boom, 15' jib

UNDERWOOD TRANSFER CO., INC.
719 Virginia Avenue, Indianapolis, Indiana
Phone: Market 0212 or Market 5270

OIL & ASPHALT TANKS

17-10,000-GAL. RR CAR TANKS WITH HEATING COILS. TESTED & GUARANTEED.

9-15,000, 20,000 & 25,000-GAL. HORIZONTAL WELDED STEEL STORAGE TANKS.

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MINIATURE
DUST MASK

Keeps dust out of nose. Handy as pair of glasses. 9 sq. in. filter. Weighs only 1 oz. Order Today!

Only $1.00 p.p.

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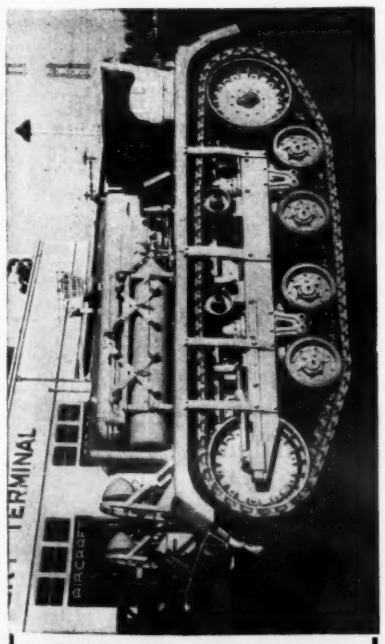

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Clears Snow IN WINTER MONTHS

When last winter's heavy snows blocked Utah state highways, Contractor H. W. Glenn, of Salt Lake City, found his high-speed, rubber-tired Tournadozer in big demand for snow removal. On one stretch between Newcastle and Modena, shown above, the 4-wheel-drive Tournadozer quickly opened an initial pass down the length of the entire highway. Then, with its fast-shuttling, forward and reverse speeds, the drift-busting Tournadozer widened the trail by making diagonal passes across the highway.

No surface damage

Big, 21.00 x 25, low-pressure tires left pavement in A-1 condition on Tournadozer-cleared sections . . . while considerable damage to oiled and paved surfaces was reported on other stretches in the area where crawler-type units were used.

Too, Tournadozer's fast working speed and 100% mobility on rubber meant more snow cleared . . . faster moves from one road section to the next . . . extra earnings during the winter months for Owner H. W. Glenn.

Pulls Scraper DURING DIRTMOVING SEASON . . .

Tournadozer, Carryall—Trademark Reg. U.S. Pat. Off. R178-α

Out-produced crawler-scrapers

Throughout the dirtmoving season, this same Tournadozer does double duty as a high-speed bulldozer, and as a prime mover for scraper operation on Glenn's road construction contracts. Typical example is the 300,000-yd. Enterprise-to-St. George highway (illustrated). Contractor Glenn reports that over the duration of the job, his Tournadozer, coupled to a LeTourneau LS Carryall Scraper, moved more station yards than any crawler-scraper combination on the project.

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IT'S RUBBER THAT PUTS THE ACTION IN TRACTION